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AMERICAN PHARMACEUTICAL ASSOCIATION.

THE thirty-fifth annual meeting of the American Pharmaceutical Association was called to order in the city of Cincinnati, Ohio, on Monday, September 5th, 1887, at 3:45 P. M.

In the absence of the President, Charles A. Tufts, Dr. H. J. Menninger, the first Vice-President, occupied the Chair and introduced Mayor Smith, of Cincinnati, who in a few fitting and well-chosen words congratulated the Association upon its selection of place of meeting; referred to the good work the Association had a chance of doing, and concluded with a cordial and hearty welcome.

The presiding officer, replying for the Association, thanked the Mayor for his kind words and accepted the welcome in the same spirit as offered, saying, among other things, that this was the third time the Association had visited the "Queen City," and at each time was surprised at its rapid, continuous growth and increasing prosperity.

Dr. Menninger then read an address which he stated had been prepared only after a short notice that he would be compelled to take charge of the meeting. One of the main points referred to was the anticipation of the successful reorganization of the business of the meeting, so that there would no longer be any necessity for two national organizations of retail druggists.

Referring to the work of the Committee who had the matter under consideration, he outlined some of their recommendations and approved the idea of setting aside certain times for the consideration of special subjects; that the A. P. A., while known as a scientific body, need not necessarily devote its whole time to matters of scientific interest and thereby neglect the equally vital points of trade or commercial interests; it should represent the druggists as a whole and give all a chance in its meetings; this same thing was done in the British Pharmaceutical Association and the German Apothecaries' Society, and thus all standing shoulder to shoulder, renewed vigor would permeate through the whole body and much more could be accomplished than ever before.

He announced the Association to be in a very prosperous condition; a few years ago the treasury was virtually empty, to-day we have an overplus of a few thousand dollars. He concluded by entreating members who had opposing views to advance in the true spirit of the rising man, to have malice toward none and charity towards all.

Mr. Geo. W. Kennedy, secretary of council, read the names of candidates for membership which, under the rule, were laid over. The Secretary, J. M. Maisch, read the credentials of delegates from the different colleges, State, local, and alumni pharmaceutical associations which had been accepted by the Council, and the members of the Nominating Committee were named.

The question whether a State having two State associations was entitled to two representatives on the Nominating Committee was settled by the presiding officer.

The State under consideration, Tennessee, having two associations was entitled to but one representative, as the title of one of the associations showed that it belonged to a section of the State only and therefore was a local institution.

The Nominating Committee consists of fifty-three members, one representative from each State Association and College, and five members at large.

Mr. MacMahon moved that delegates entitled to representation on the Nominating Committee, who might arrive before the committee met, might be allowed to act on that committee. Carried.

Mr. Kennedy read the minutes of the Council meetings held since the last meeting of the association. He reported that the Formulary Committee had requested a grant of money from the Centennial fund for paying the expenses of their work; that the engraving of E. S. Wayne had been designated for the proceedings, and that members were enabled to solicit new members for the association by blanks furnished for that purpose.

Report of Auditing Committee on the ex-treasurer's accounts was read and approved, and also a motion of the council that the treasurer shall arrange with some guarantee company to furnish a bond, and that hereafter the treasurer shall furnish an alphabetical list, to be published in the proceedings, of those members who have paid their dues. Also, a motion to create a fund to be known as "The Committee on Arrangement Fund," in which should be placed a sum of $400, left over by previous entertainment committees.

The minutes of Council were approved. Mr. Zwick, of Kentucky, suggested that the Council should place all moneys in open account in a bond so as to draw interest. Prof. Remington read the by-law of the Council bearing on that subject, showing there was no open account, but all the moneys were either invested in bonds or placed in bank so as to draw interest.

Mr. W. S. Thompson moved that $4,000 be invested in U. S. bonds. Carried.

Report of Committee on plan for managing meetings of the association was read by its chairman, Prof. Remington.

[This plan involves the division of the Association, at its Annual Meetings, into sections, so arranged that the various interests, scientific, administrative, legislative, commercial, and social shall not interfere with each other.]

Mr. Brown, of Kansas City, asked if the members of the Association were to select the sections they were to go into or if each section was open to all.

Mr. Remington thought that at present it was better for the members not to divide, but only to divide the business so that certain sessions of the Association could be kept for special subjects and all members who wished could participate in each, whereby the business of the association could be expedited.

Mr. Brown also inquired if the president of the Association would occupy the chair in each section or whether each section would have a separate chairman.

Mr. Sheppard, of Mass., said each section would elect its chairman who would preside while that section was in session.

Mr. Hallburg asked the reason of dividing pharmaceutical education from legislation, making a section for each, both depended upon each other and should be kept together.

Prof. Remington said this had been duly considered, but at present it was wisest to keep these sections separate, as representatives from colleges might have enough to talk about interesting to them and not be interested in matters pertaining to Boards of Pharmacy; that other men interterested in boards of pharmacy would not wish to talk about college of pharmacy matters, and so it is better for each to have a section for themselves. We can try these new features and see how they work, and if we find it better to do so, in another year or two we can change them.

The report was then laid over until another session for discussion and action.

Mr. G. Merrell, from Committee on Entertainment, suggested that members register as soon as possible and secure their entertainment tickets before Tuesday night, so that full arrangements could be made.

Mr. Ebert moved that the Nominating Committee be directed to meet at the Grand Hotel on Wednesday evening.

The chairman, Mr. Alexander, of St. Louis, second vice-president, considered the motion not in order according to by-laws.

Mr. Nicot, of Brooklyn, thought it would be advisable for the Nominating Committee to defer action until the reportof Committee on Managing Business had been disposed of, which no doubt would be adopted at the following session. One of the provisions of that report was that the officers take their stations at the last session of the meeting.

A long discussion followed on this, and as to whether it was better to hold a session within a short time or wait until the next day, so that the report could be disposed of and the recommendations of the committee adopted. Many members participated in it and finally the point was made clear that, no matter whether another meeting was held that evening or the following day, it would be a second session and would have to be held under the working of the old by-laws. The sentiment of all was not to quibble about small matters in this respect in view of the prevalent desire of the members for a change of the order of business, and that by waiting until next morning the members could look over and study the reports. It was then moved that when the association adjourn, it adjourn to meet at 9 o'clock the following morning, and that the special order of business after installation of officers be the consideration of the report of the Committee on Management.

Mr. W. S. Thompson, Chairman of Council, reported the reception by the Council of a check from Mr. Charles A. Tufts, the ex-treasurer, for $2,195, which check balanced his accounts.

After a short discussion on sending a telegram to the International Medical Congress in Washington, the session adjourned.

Tuesday's Sessions.

Meeting called to order 9:55 A.M. Dr. H. J. Menninger in the chair. Secretary read minutes of previous session,

which were approved. Minutes of Council read by G. W. Kennedy. The Nominating Committee reported the following names for officers for the ensuing year:

J. U. Lloyd, Cincinnati, O., *President.*
M. W. Alexander, St. Louis, Mo., *Vice President.*
A. K. Finlay, New Orleans, La., *Second Vice-President.*
Carl Simmons, St. Paul, Minn., *Third Vice-President.*
J. M. Maisch, Philadelphia, Pa., *Permanent Secretary.*
S. A. D. Sheppard, Boston, Mass., *Treasurer.*

Mr. Lloyd begged the Association to relieve him of the nomination for president, for he considered there were others better fitted and more deserving than himself. The Association, however, would not listen to this, and on motion, the Secretary was ordered to deposit an affirmative ballot for all the officers nominated, which being done, the chair appointed ex-presidents Saunders and Thompson a committee to escort the newly elected officers to the platform.

President Lloyd, upon taking the chair, said he was not a speech maker, but only a simple pharmacist of twenty-five years' standing, that he had always followed the advice of two gentlemen given to him many years ago, and had benefited by it, of doing what work he had to do in as good a manner as possible. He said the Association would have much to bear with him and hoped they would overlook his shortcomings.

Mr. Finlay, Second Vice-President, was then introduced.

Mr. Day, of Illinois, read the report of Committee on Legislation. Four States and two territories had obtained new laws during the past year.

Mr. Hallberg asked whether Wyoming's pharmacy law was in operation. He understood it was nullified, as the board did not organize at the proper time.

Mr. Bedford, of New York, informed the Association that the law had passed and the board was organized, but owing to some want of congeniality there was no work being done.

Mr. Ebert thought the Association should outline some general law and bring it to the notice of the several States, so that there might be a general recognition of each other's certificates, as it was of great importance for a young man travelling from one State to another to have nothing placed in the way of his making a living.

Mr. Zwick, of Kentucky, considered and read Article I. of the Constitution.

Mr. Seabury, of New York, thought that passing an examination in one State did not make him fit for another, for the various boards had such different requirements. Oppressive laws, however, should be repealed.

Several other members joined in the discussion, when Professor Remington asked that it might be laid aside until after the adoption of the report of the Committee on Management, when there would be found a section for such a topic.

Mr. Macmahon, of New York, moved that a Committee on Time and Place of Next Meeting be appointed, to report at a subsequent session. Carried.

Mr. Alexander, of Missouri, and Mr. Carl Simmons, of Missouri, First and Third Vice-Presidents, were here escorted to the platform and introduced, each making a few remarks; by the request of the President, Mr. Alexander assumed the management of the meeting.

Committee on Prize Essays reported the awarding of of the Ebert prize to Emlen Painter, of New York, for his paper of last year on "Spiritus Ætheris Nitrosi."

Report of Committee on Management called, but its chairman thought it better to clear off all special business belonging to the old order of business first.

Mr. Simmons, of Minnesota, delegate to the Wholesale Druggists' Association, made a short report.

Mr. Colcord, of Lynn, Mass., reported from Committee on Introduction of Foreign Medicinal Plants, showing the difficulties he had met with in his correspondence with the Commissioners of Agriculture, and caused much amusement by enumerating the names of the plants sent him, among which were dandelion, catnip, burdock, as rare foreign medicinal plants which were thought desirable to be introduced in the United States.

Mr. Hallberg made a verbal report from the delegates to American Medical Association.

Report of Treasurer was then read and approved.

Committee on Membership, G. W. Kennedy, Chairman, reported the membership to be 1,291 this year, against 1,322 last year, the loss being due to the straightening out of the books and dropping of those in arrears.

Committee on Publication presented their reports. All these reports were accepted and referred.

The Chairman here announced as Committee on Time and Place of Next Meeting, Messrs. MacMahon, New York; Sloan, Ohio; Baker, Virginia; Fennel, Ohio.

Mr. Ebert inquired as to the Committee on Pharmacopœia, and was informed there was none appointed.

The Chairman appointed Messrs. E. A. Sayre, Brooklyn, and Whelply, St. Louis, a Committee on the Address delivered by Vice-President Menninger at the opening of the meeting.

The report of Committee on Management of Business was then taken up and adopted with slight alterations after considerable discussion.

In regard to Article 2d. (Chapter VIII.*)

Mr. Painter, N. Y., thought there should be a limit put on the time a person could wait before accepting the invitation to become a member of the Association.

Mr. Remington thought better not put a limit until the rule had had a chance of being tried, as some persons might accept the invitation after their time had expired and finding the door closed against them would not feel disposed to come in under another invitation; the working of the rule could safely be left to the Committee on Membership.

Mr. Seabury, N. Y., said we are putting this on trial and can easily abolish it after one year's trial if we found it was being abused; he thought it would be the means of bringing many members in and would make the Association very large.

Article 6th, Chapter VIII. Mr. Colcord thought it just to other members that the initiation fee be kept as it was and the dues reduced to four dollars. This did not meet with favor.

Chapter IX., Article 2d, Mr. Hallberg thought should be changed to read scientific section.

Article 6th, Chapter IX. was discussed and it was decided that each section could prolong its session until all its business was transacted, that each member of the Association was entitled to voice and vote in each section, that having found the old plan impracticable at present nothing was left but to try this. Members more interested in certain sections than in others could attend whichever they preferred.

In response to an inquiry it was shown that the sentiment of the committee was that eventually it would be necessary for sections to be held simultaneously. Work done in any one section could not be changed by the association at the last hours of the session.

A new amendment was here offered by Mr. Hollister that representation on Nominating Committee shall be only from State associations. The discussion upon this amendment was very long, extending over to the afternoon session and was participated in by very many of the members.

It was finally amended so that there should be *two* representatives from each State on Nominating Committee, the representative to be chosen by the different associations of each State before the meeting of the Association.

Committee on Time and Place of Meeting reported they had selected Detroit, and the 3d of September, 1888. This was afterward amended, allowing the Council to select the time, to be published in the Proceedings, so that it would not conflict with the National Wholesale Druggists' Association.

The Council was given the privilege of making such verbal alterations in the text of the amended by-laws as would not affect the sense, but would make them read smoothly.

The Committee on National Formulary presented its report (see elsewhere in this number) which after a short discussion was adopted by the Association; the work of the committee was thereby accepted by the Association and the National Formulary becomes the unofficial formulary for the whole country.

A motion made by Mr. Painter, New York, that the formulary be copyrighted was referred to the Council with power. Later in the session, the Council ordered the formulary to be copyrighted and passed a resolution allowing pharmaceutical associations, journals, and individuals

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* The several articles referred to above read as follows:

Chap. VIII., *Art. II.* Any two members of the Association in good standing, may propose to the Council the name of any person eligible to membership and, if approved, the Council shall recommend the person named to the Association, and if the Association shall by vote invite said person to become a member, his membership shall be completed by his signing the Constitution and By-laws and paying the annual contribution for the current year.

Chap. VIII., *Art. VI.* (It is proposed to abolish the initiation fee).

Chap IX., *Art. II.* To expedite and render more efficient the work of the Association, four sections shall be formed as follows: 1. Scientific papers. 2. Commercial interests. 3. Pharmaceutical education. 4. Legislation.

Chap. IX., *Art. III.* The business of the Association shall be arranged so that the labors of each section shall be considered only at the session or sessions to which they are specially assigned.

For Article IV., substitute the following:

Art. IV. The first, second, and last sessions of the annual meeting shall be devoted to the general business of the Association, and sufficient time shall be assigned to the Association at the beginning of all other sessions to read its minutes and act on the report of Council on membership.

Add the following new Articles:

Art. V. At the third and fourth sessions, the business of the Section on Commercial Interests shall be considered.

Art. VI. The fifth, sixth, and seventh sessions shall be devoted to the reading of scientific papers and the discussions thereof.

Art. VII. The sections on Legislation and Pharmaceutical Education shall hold their meetings at the eighth session either at the same time or one after the other, as may be determined by the Association.

Art. VIII. A chairman and secretary shall be elected by ballot by each section to serve at the special meetings of said section. And the minutes of each meeting, together with all documents and papers which belong to each section, must be placed as soon as possible in the hands of the permanent secretary for publication or safe keeping.

Art IX. The chairman of each section shall preside at each of its meetings; shall prepare a short address treating upon the subjects connected with his section, to be read before the section at the next annual meeting.

Art. X. There shall be elected by each section a committee, of which the chairman of the section shall be chairman, to whom shall be delegated the duty of arranging in advance the business to come before the section at the next annual meeting, these committees in each case becoming standing committees of the Association.

to make use of it in any way, provided they did not change or mutilate the text.

An invitation to visit the Art Museum was read by the local secretary, after which the Association adjourned until next morning at 9 o'clock.

Wednesday's Sessions.

Morning session called to order at 10:25. Minutes of the previous session and of the Council read and approved; under the new by-law adopted the day before, of inviting druggists to become members, the names of 109 druggists were read as having been invited.

The Association then proceeded to organize the section on Commercial Interests according to the newly amended by-laws.

Messrs. A. H. Hollister, of Wisconsin, and J. W. Colcord, of Massachusetts, were elected, respectively, Chairman and Secretary. Mr. Hollister upon assuming the chair made a lengthy speech, in which he congratulated the Association upon its new departure, for now the two Associations of retail druggists were merged in one, and all the energies of the members could be used for the advancement of the A. P. A. He looked forward to a large membership and thought it an epoch in the Association's history.

Mr. Merrell extended an invitation from Proctor Campbell to visit the soap works at Ivorydale.

The section selected the following members to constitute the Standing Committee on Trade Interests of the Association: A. H. Hollister, Michigan; J. W. Colcord, Massachusetts; E. A. Sayre, New York; W. H. Rogers, New York; A. K. Finlay, Louisiana.

A recess of five minutes was taken, after which the statement was made that the National Retail Dealers' Association had directed their Executive Committee to close up the financial and all other affairs of that Association, dividing the expenses among such State Associations as have contributed, and return the balance to said Associations. This, which virtually dissolved the N. R. D. A., was received with gratification.

Mr. Canning suggested that, as there was no work laid down for this year, the section might profitably employ its time in the discussion of the twenty-five dollars internal revenue tax, and moved that their Committee on Trade Interest co-operate with the Wholesale Dealers Association in their efforts to remove this tax and the tax on alcohol.

A little discussion took place as to whether this subject belonged to this section or the one on legislation; it was decided that each section should decide for itself what business it should take up.

The internal revenue tax was then considered for the balance of that session. Various views were expressed, many members thinking it not necessary for druggists to keep or sell liquors even for medicinal use, while as many more considered it impossible for drug stores to exist unless liquor was kept in stock. Attention was called to the fact that selling alcohol would made a druggist amenable to the tax. The sentiment of all was that liquor as a beverage should not be dispensed by druggists. Charges made that in prohibition States or counties the druggists found it profitable to evade the laws, were warmly combated by members from Kansas who showed how impossible it was for druggists to violate the law without being punished. Several members talked against the motion because it included the repeal of the 90 per cent alcohol tax, and it was finally amended so as to refer only to the repeal of the two special revenue taxes, viz., tobacco and liquor, as thus amended it was passed and the section on Commercial Interest adjourned.

Wednesday afternoon session was called to order about 3:45. The section on scientific papers was organized by the election of T. Roberts Baker, Virginia, as Chairman and Dr. A. B. Lyons, Michigan, as Secretary; these gentlemen, in conjunction with J. M. Good, of St. Louis, constitute the Committee on Papers and Queries for the coming year.

Clay W. Holmes, New York, read a paper on "Vanillin" (see next number).

The paper was discussed at length; the points dwelt upon being that, as it took one ounce of vanillin to represent one pound vanilla bean, and even then lacked the full flavor of the extract made from the bean, it was not wise to substitute. All the principles of the vanilla did not reside in the vanillin. It might do as a substitute for tonka to be mixed with vanilla. There is always a piny odor about preparations of vanillin which is disagreeable to some; that people generally were used to an extract in which tonka entered; that vanilla extract would develop a much better flavor if the bean were macerated in the menstruum for three or six months in a heated place.

Mr. G. W. Kennedy read a paper on "Fluid Extract of Liquorice" (see page 192).

In the discussion that followed, Mr. Klie, of St. Louis, thought the amount of ammonia ordered by the pharmacopœia too large, as it developed an unpleasant odor in the fluid extract after standing.

Mr. Diehl, Kentucky, referred to the careful experiments made with the fluid extracts by the Committee on Revision of the Pharmacopœia. Only after a number of trials had the best formulæ been selected.

Mr. Ebert thought the less heat used in making fluid extract of licorice the better, as it gelatinized the starch and caused a deposit; that to percolate the root with lime water when making a solid extract, licorice would furnish a product that was better fitted for tobacconists' use, as it did not have such an unpleasant taste as when ordinarily made.

Prof. Remington thought the process of Mr. Kennedy of evaporating the last portion only to a syrup was not so good as the pharmacopœial process of evaporating to an extract, for by a partial evaporation the alcohol is driven off and the syrupy liquid left is not like the portion first collected, and in many instances when mixed with it causes precipitation of some of the active principles; while, if the pharmacopœial process is followed, this will not happen. In this respect, the 1880 formula was better than that of 1870.

Prof. Lloyd said the amount of ammonia needed varied with the age of the drug.

A member thought that licorice did not deaden the taste of quinine by acting on the gustatory nerves, but that the tannin of the root united with the quinine, forming an insoluble compound.

Prof. Goode, of St. Louis, read a paper from Dr. Charles O. Curtman on Agents for making Hydro-alcoholic or Aqueous solutions of volatile Oils, etc. (see page 193).

The discussion on this paper was quite lengthy, being devoted almost exclusively to the preparations of medicated waters; the relative value of cotton, talcum, magnesia, calcium phosphate, glass-wool, and hot water being explained by their different champions.

Mr. Stevens, of Pittsburgh, favored the cotton process of the pharmacopœia, but thought a variation in process of packing in percolator better. He preferred to separate the cotton in five or six portions, place a layer of sand between each, and return the first portion of percolate, if at all cloudy. The rest will be clear.

Prof. Lloyd favored the pharmacopœial process, for it had always yielded good results in his hands.

Prof. Remington thought the great objection to the cotton was, that it is not a cleanly process; it was impossible to follow the directions to pick the cotton apart, while distributing the essential oil, without soiling the fingers; otherwise it was a very good process.

The same result that Mr. Stevens obtained by using sand could be obtained by placing a plug of dry cotton in the bottom of the percolator.

The theory of the fungoid growths coming from cotton spoken of by Dr. Curtman he was not willing to adopt until more proof had been offered; it was a microscopic plant belonging to the confervæ, and would appear in medicated waters made by any method.

He thought the change from magnesia of the 1870 pharmacopœia in the manufacture of these waters was a sudden one, and not made upon a very valid reason. The main objection to it being the fear of precipitating alkaloids when mixed with their solutions, was too remote to cause the upsetting of the custom of the entire country, and entail so much trouble on the druggists.

Mr. Hallberg said the best method was to distribute the oil upon paper pulp, put it in a bottle, and pour hot water on and agitate; when cool, filter. You would then have a saturated water, with but little trouble, which comes nearer the original method of distillation than when made by another method.

A motion was made that the subject of medicated waters made by means of carbonate magnesium, etc., be referred to the Committee on Pharmacopœia. Carried.

Paper presented from C. K. Gallagher, North Carolina, on "North Carolina Stills" (see next unmber).

The session adjourned until next morning.

Thursday's Sessions.

Meeting called to order at 10:25.

Specimens of earthquake sand collected by G. J. Luhn, of Charleston, S. C., were shown.

Mr. Painter, New York, read a paper on "Irish Moss Gelatin" (see page 190), accompanied with samples.

A paper from Prof. J. U. Lloyd was read on "Pharmacists and Manufacturers" (see page 185) and discussed.

The ability of the retailers to prepare most of the galenicals, even fluid extracts, as cheaply as they could purchase them, and that, with ordinary care, they would be better than those of the large manufacturer, was coincided in by most of the speakers. Statements were made that wholesale dealers make contracts for supplies of herbs and roots in the early part of the year, but accidents sometimes happen whereby the crops are short, and the supplies fall off; they then have to go into the open market and take what they can get. This will happen to the most careful; the retailer can always select the best, for he needs but a small quantity.

Mr. Ebert thought the next revision of the pharmacopœia should reduce the strength of fluid extracts to 50%, and that would prevent deterioration. He related his experience in the preparation of glucose. When doing it upon a small scale, and using only a seven inch vacuum

pan, the result was good; but when he increased the size to twenty inches it took a longer time, and the product was not so good, and now glucose manufacturers were all coming back to the smaller pan.

He charged that the pharmacopœial processes were made for the benefit of the manufacturer and not for the retail druggist. This was denied by several who wished it pointed out where there was any formula in the pharmacopœia against which such a charge could be made. The statement was made that the retailer was held responsible by the patient and physician for all the medicines he sent out; hence he should make as many of them as possible. The practice of making tinctures from fluid extracts was decried, and assertions made that city druggists do not practise that so much as the country druggists do.

Mr. Painter, of New York, read a paper on "Medicines of Medicine," which received considerable discussion, and a motion was made to send a copy of it to the International Medical Congress at Washington, which was amended to send it to all the medical journals (page 189).

A paper from A. B. Taylor, Pennsylvania, on "Weights and Measures," was read, which precipitated much discussion on the relative value of the various systems of weights and measures, and the opinion was expressed that the new system, suggested by Mr. Taylor, would rather complicate than simplify the study of this subject; that the metric system was growing in favor and eventually would be received by every one; that microscopists can work better under it than under any other method.

Mr. Hallberg offered a resolution that the Association express its opinion that at the next revision of the pharmacopœia, parts by weight should be changed to parts by volume. This, after being discussed by several, was laid over to another session.

The third session of the scientific section was held on Thursday afternoon at 3 o'clock.

A paper on "Ground Ointment Medicaments" (see page 192), by Joseph Feil, was read and after a short discussion referred to Publication Committee.

Paper read on "The Percentage of Ethyl Nitrite in the Washed Nitrous Ether of the Pharmacopœial Process for Spirit of Nitrous Ether," by W. Simonson Ohio (see page 191).

A paper by Joseph Feil, on "Bismuth and Potassium Citrate" (see page 194), was read, also one by the same author on "Solelixirs."

The subject of printing the papers in advance of the meeting was called up by Mr. Painter, who expressed his idea that there had been more interest shown by reason of its being done this year, and offered a motion to the effect that it be done each year. Some objection was shown to the motion by some who feared it would be expensive, and that some journals would be favored more than others by it. Some members thought the committee should make a synopsis of the papers and have that printed; others opposed this, for the amount of work it would cause, and the expense would be but very little less than printing the whole papers. It was suggested that the printing could be done by the same printer who published the proceedings, keeping the type standing or electrotyping it. It was also suggested that the Association purchase its own type.

It was finally settled by ordering the Committee on Papers and Queries to have the papers printed in advance of next meeting, and not to allow any individual or journal to receive a copy until they were ready to be read.

Mr. Painter called attention to the large attendance at the sessions of this section, and to the slur put upon the Association by those who said that most of the members did not care for science.

A vote of thanks was tendered to Mr. Painter for his work on the Committee of Papers and Queries.

This completing the business of the section on scientific papers, it adjourned.

The section on pharmaceutical education was immediately organized by the election of Prof. J. A. Judge, chairman, and Prof. Whelply, St. Louis, as secretary. Prof. P. W. Bedford, of New York, was elected with the chairman and secretary to form a committee.

There being no business to bring before this section, it took a recess to enable the section on pharmaceutical legislation to organize, which was done by the election of Mr. R. F. Bryant, Kansas, as chairman, and W. P. DeForest, Brooklyn, as secretary.

A committee was elected under the by-laws to make arrangements of business for next meeting, consisting of the chairman, the secretary, and Prof. J. M. Maisch, Pennsylvania.

Mr. Day, Illinois, moved the appointment of a committee to devise a plan, if the same be found feasible, for the interchange of certificates by boards of pharmacy. In support of his motion he stated he had corresponded with every board of pharmacy in the county on this subject, and their replies in many cases were favorable.

Mr. Brown, of Kansas, spoke of the necessity of co-operation to arrange the various laws, so they could be made uniform in the different States, and thought it would be necessary to confer with State associations for that purpose.

Messrs. Rogers, Kentucky; Baker, Virginia; Cumming, Massachusetts; and others took part in the discussion which was closed by Mr. Day, explaining the necessity of a uniformity in the practice of recognizing certificates. The motion was carried and the chairman given time to appoint a committee.

Mr. Nicot, Brooklyn, moved that a record be made for the information of the Boards of Pharmacy, represented in this section. Carried.

The representation was as follows: New York City, P. W. Bedford; Kings county, L. E. Nicot, W. P. De Forest; Michigan, Geo. McDonald, S. E. Parkhill; Virginia, J. W. Thompson, T. R. Baker; Kansas, R. F. Bryant; Illinois, C. W. Day, A. E. Ebert; Ohio, J. A. Nipgen, E. M. Hatton, J. Weyer; Kentucky, Wiley Rogers, R. J. Snyder; Wisconsin, A. Conrad, A. H. Hollister; Pennsylvania, A. Robbins; Iowa, Geo. H. Schafer; Missouri, M. W. Alexander; Georgia, John Ingalls; Alabama, P. C. Candidus; Florida, J. V. Spear; District Columbia, W. S. Thompson.

Mr. Eliel thought that members from States having no boards of pharmacy were not interested in this section, but his attention was called to the fact that matters pertaining to boards of pharmacy was only part of the business of this section, as all other legislation affecting druggists could be considered here also, besides the effect on members from States having no pharmacy law will be such as to make them more interested in obtaining one.

Mr. Cushman, Florida, stated that his State had a pharmacy law, but it was not obtained by the druggists. The law requires the medical college to appoint three doctors as examiners. The newly organized State pharmaceutical association proposed to get a law better fitted for druggists.

Mr. Carraway, of Tennessee, complained of men who failed in examination in other States coming to do business in his State. (Tennessee has no pharmacy law.)

Mr. Day presented the following, as a query for next year's discussion: "Should the diplomas of colleges of Pharmacy entitle holders to registration without examination?"

Mr. Hallberg, Illinois, presented the following: "Give an outline of a pharmacy law embodying all desirable features."

The section then adjourned.

Friday's Session.

The last session of the Association was held Friday morning, the minutes of the Council were read. The main business of the Council had been to accept a bond of $5.000 from the Guarantee Company of North America on behalf of the treasurer; to take action on the names of druggists invited to membership; to order that no more portraits be placed in the Proceedings; and that the Association be incorporated.

Prof. Diehl, Kentucky, reporter on Progress of Pharmacy, read his report.

Committee on Drug Market of last year, Mr. Mason, Canada, chairman, presented their report.

The Nominating Committee presented the names of the following gentlemen for members of Council: J. M. Good, Missouri; L. C. Hopp, Ohio; W. Dupont, Michigan; and of J. Verner, Detroit, as local secretary. Upon ballot they were elected.

A vote of thanks was passed to the local committee, to the ladies of the Cincinnati druggists for their kind attention to the visitors; also a similar vote to the Mayor and to the citizens.

Resolution was passed that the proceedings be issued before January 1st.

A delegation was appointed to visit the Wholesale Druggists' Association next year.

Mr. Carraway offered a resolution inviting female druggists to join the Association, which, after discussion, was laid upon the table.

Mr. Macmahan moved that three prizes be offered to the exhibitors next year. Carried.

Mr. Cumming moved that the Committee on Commercial Interests co-operate with the Wholesale Druggists' Association in the matter of Mutual Fire Insurance.

Mr. De Forest moved that, as far as possible, the Council be directed to have all reports of officers and committees printed previous to the annual meetings. After some discussion this was carried.

The Council reported the election of W. H. Rogers, Middletown, N. Y., and G. W. Kennedy, of Pennsylvania, as Chairman and Secretary of the Council.

The Association then adjourned to meet in Detroit next year.

NOTES OF THE MEETING.

The meeting just concluded was probably one of the most successful in the history of the American Pharmaceutical Association. The number of members in attendance was quite large; the interest manifested at each session was

very gratifying. There seemed to be but little bickering, and but little of that waste of time that has characterized the meetings for several years past.

Many had come prepared to be grieved at what was feared to be a lack of attention on the part of the officers to their duties; but they were very soon convinced that these officers had well filled their trusts, and in a manner that redounded not only to their own honor, but to the best interests of the Association. The finances of the Association are in very good condition, better than ever before. The membership is on a solid basis. There were seventy new members elected this year under the old by-laws, which were as many as were elected the last two years together. Eighteen delegates became members by signing the by-laws and paying dues; this has not been known to occur before.

The new arrangement of order of business, dividing in sections, met with universal favor, for now every one knows when the particular branch that he is interested in will be brought up. The papers received more attention than ever before, and the number of members who stayed to listen to them was very large.

The number of names of druggists who were invited to membership under the new by-laws is five hundred, and many think that four-fifths of them will accept.

The merging of the National Retail Druggists' Association into the A. P. A. allows all energies and influences to be directed to one common object, the advancement of the Association, and it is believed by many that ere long the Association will number many thousands.

The druggists of Cincinnati vied with each other to make the visitors' stay pleasant, and they succeeded, for the reception in the hotel, the concert at the Grand Opera House, the rides for the ladies, the presentation of the spectacular pageant of Rome under Nero, and the ride and banquet on Friday, to say nothing of the evening visits to the places "over the Rhine," filled up the time between the meetings in a very enjoyable manner, and made one almost forget the sultriness of the climate, the smokiness of the air, and the dirt in the streets. All hail, Cincinnatians, you did your part nobly, and we will always carry a kindly remembrance of you in our bosoms!

Pharmacist and Manufacturer.*

BY J. U. LLOYD, CINCINNATI.

At the meeting of the Ohio Pharmaceutical Association, Mr. L. C. Hopp introduced a resolution in support of a class of pharmaceutical preparations to be made from plants, upon the principle used in making fluid extracts and tinctures, but to represent only 50 per cent of the drug.

It would be out of place now to argue for or against that motion; suffice it to say that, owing to neglect of business on my part, and absence from that session, I missed the opportunity to obtain the views of the talented members who expressed themselves regarding the subject. My excuse now for bringing the matter before our Association is to review a phase of the argument that was presented at that time, and which I have long studied, and more than once intended to venture an opinion upon.

During the argument Mr. Hopp, in substance, remarked that manufacturers of pharmaceutical preparations on a large scale thought that they could better produce—or they lead pharmacists to that impression—fluid extracts representing the drugs, pound to pint, than pharmacists with ordinary appliances. This phase of the argument was not debated at our meeting.

In considering it, I must announce at the outset that my sphere of labor, perhaps, is not of such magnitude as to make me an authority, and that this paper is written both to gain information and to record my experience, which, in a small way, covers much ground in species of plants worked, and also, in many instances, in the preparation of moderately large quantities.

I exclude the profit and loss side of this question. The query is manipulation—the advantage one has over the other in the quality of the product.

It must be borne in mind that this is not the consideration of some substance that is involved by long-continued investigations of a semi-proprietary nature; it is not a comparison of something obtained on a large scale and originated outside of legitimate pharmacy, and which the pharmacist designs to imitate; and it is not an obscure material, the working process being unknown. It is, upon the contrary, a simple product designed to be readily prepared by ordinary pharmacists, with usual appliances, and if any imitation is necessary, it must be from those who vary from the standard and deviate from the officinal preparations. Then the question is, What real advantage has the trade worker over the pharmacist?

1. The quality of material is of primary importance. In procuring such of prime condition, has the large operator any advantage? That he may obtain more or less of exceptionally nice specimens of drugs is evident, but can he as easily procure a large uniform quantity, all of prime drugs? Is it not probable that considerable unevenness must exist in many instances? I doubt if our wholesale druggists are often so placed that they cannot supply their patrons with a pound or a moderate amount, choice, of almost any drug, for selections are easily made in a small way. I doubt also if large operators, as a rule, do not experience more or less trouble in obtaining their supplies, and the question arises, Who has the advantage over the other? I am now convinced that the pharmacist can usually obtain drugs of first quality, if so desired, in amount sufficient for his requirements, and that the manufacturer on an average can do no better.

2. *Improved Apparatus.*—More or less is heard about the advantages enjoyed by manufacturers by reason of improved and complex apparatus. We should not forget that the object is to produce a counterpart of a preparation that is easily made with ordinary apparatus in quantities of about one pint, according to the recognized authority. If the manufacturer improve his apparatus, it must be to overcome some disadvantage he labors under, or to give him a pecuniary benefit. If he produces either a stronger or a weaker preparation than is yielded by the U. S. P. amount by means of alteration in method, the question arises, Is the substance labelled true to name if it is thrown upon the market under the officinal appellation of fluid extract? Is not such improved apparatus, if it exist, designed for the simple purpose of enabling the operator on a large scale to imitate a product that is standardized on a small scale? Remember, I exclude economy; the question is product. My view of the matter is that pharmacists, with ordinary opportunities, can as easily increase the strength of a fluid extract beyond the standard as the manufacturer, but that such course is reprehensible. If manufacturers employ apparatus that yields a product different from the officinal, they, too, are subject to criticism. In my opinion, simple percolation is as yet unexcelled, and my experience with complex forms of apparatus has invariably led to their rejection and a return to the simple percolator.

3. Experience and skill are necessary in both cases. The large operator has quantity advantage, but this with changing proportions really is a problem to study. Besides, magnitude of manipulation is not a criterion of excellence. It is surprising to note how little some of us really know about the true inwardness of subjects by which we are actually enveloped. Who will deny that workmen may be surrounded by tons of material, and still be ignorant of the properties of such substances beyond what they learn from outward sources? Admit that each is equally skilled, the one in working small amounts, the other in quantities, and we have not solved the problem. The large operator is a manager, the small operator the workman. The large operator must trust his employees to moisten, handle, pack, and often percolate and finish. The pharmacist may with his own hands begin and end the operation, and instead of simply overseeing the process, he really is the pharmacist that makes the preparation. The large operator's percolators are opaque, and he works in darkness; the small pharmacist uses glass and can observe the operation as it progresses. It is sometimes advanced as an argument that pharmacists often have imperfect pharmaceutical educations; cannot it be said that manufacturers are sometimes entirely dependent upon employees, and do not even make a personal pretension to pharmaceutical education? I have heard it advanced that pharmacists neglect their business when they make preparations, and are too much interrupted to prepare these simple pharmacals; upon the other hand, it may perhaps be said that, if personal attention to manipulation is necessary, many manufacturers, whose names appear on their labels, have reason to pass that feature of the argument.

My experience teaches that both skilled and unskilled labor is to be found in each direction. I would not attempt to draw a distinction. Some manufacturers are accomplished, careful pharmacists. Admit as much, and who will assert that the equal to any manufacturer is not to be found among pharmacists? That some who conduct pharmacies are not at all pharmacists is indisputable, but who will advance as an argument that manufacturers have an advantage in this direction? The names over the doors of each, pharmacy and factory, are sometimes liable to mislead: in the one case, an unnamed clerk being the real pharmacist, in the other case, an unknown workman being the real manufacturer. In both instances, the name on a label is a misnomer.

If I should venture an opinion, I would say the average pharmacist is as skilled as the average trade manufacturer. We have examples of the highest integrity and of superior excellence in both directions. I doubt, however, if any manufacturer of pharmaceuticals of my personal acquaintance would thoughtfully sanction the "I am better than thou" argument as a commendation of his wares.

4. Admitting, for the sake of argument, that both the large and small worker stand on an even footing regarding the foregoing phases of the subject, and we come to the real comparisons of working quantities. Large operators work from 100 to 1,000 pounds of the drug at a time.

* Paper read at the Annual Meeting of the Amer. Pharm. Assoc. at Cincinnati.

In doing so, they have the benefit of the increase of contact that may be obtained from depth of both material and menstruum. However, it is now, in my opinion, a question as to whether this advantage is not more than counteracted by the fact that, in a great many instances, it is impossible to properly percolate such large masses if the material is in fine powder, and, in consequence, the operator on a large scale is induced to employ the drug in a very much coarser condition than would be employed by pharmacists. Such coarsely ground drugs are really mixtures of various degrees of fineness, and this places him at a decided disadvantage and introduces an element of uncertainty regarding the actual condition of the drug under manipulation. All who are familiar with operations of this character will, I think, agree that such unevenly ground drugs are inclined to be extracted without much regularity as regards comparisons between the different degrees of fineness. This is evident, but there is one important factor to prevent such being accomplished that I do not remember to have ever heard mentioned, and possibly it has been overlooked by others. I refer to the fact that, according to my experience, the fine powder under these conditions is extracted *but little, if any, faster* than the coarse, and scarcely less thoroughly, and that the drug might about as well all be coarse as partly coarse. The explanation is simple when we think that the menstruum pervades all parts of the mass, and whatever may be its condition, saturates all parts of the material. Thus, instead of depleting the fine particles and then gradually attacking the coarser, it carries extractive matter from the coarse to the fine, long after the fine would have been exhausted, had there been no coarse material present. In other words, a uniform menstruum maintains a uniform rate of extraction, and the fine powder cannot be depleted faster than the coarse. I am of the opinion that the pharmacist in pharmacopœial quantities is not at a disadvantage.

5. Admit, however, that the conditions are identical as regards the powdered drug, and we come to the moistening of the drug. All agree, that in order to insure uniformity of extraction we must have a uniformly moistened powder, that is, it must not be unevenly dampened. In a small way, this moistening is readily accomplished by admixture in an evaporating basin or a large mortar. Upon the contrary, in a large way, either specially contrived apparatus is necessary or much manual labor is required. At the best, it is a question as to whether any will argue that the large operator has the advantage. I do not know of any.

6. After the powder is moistened, it must be evenly pressed into the percolator. If it is firm in any section and loose in another, uneven percolation results. Is it easier to pack a large than a small percolator and obtain a uniform pressure upon the powder operated upon? This I doubt. Upon the contrary, I can more satisfactorily obtain an even pressure with small, narrow percolators than with large ones. I do not think the operator has an advantage over the pharmacist in this direction.

7. However, admit for the sake of argument, that both a one-pound and a 1,000-pound batch of material is in the condition of a fine powder, and that both are so moistened and packed as to percolate readily. The contact between the menstruum and powder, under precisely similar conditions, appears to be very much in favor of the larger quantity, but is it really so in practice? In order to produce such advantage would it be necessary that both should percolate with the same rapidity? If it requires 24 hours to obtain a pint of percolate from 1 pound of material, should it require 24,000 hours with the 1,000-pound batch, or should 1,000 pints of percolate be obtained in 24 hours? I do not propose to argue in favor of attempting to extract 1,000 pounds of material in one day. Neither do I hesitate to say that there is not in my opinion a manufacturer in America with facilities or patience sufficient to permit him to consume three years of time with a single percolate. Therefore, I accept that in large quantities manufacturers agree to increase the flow sufficiently to obtain the percolate in a reasonable length of time. Now the question arises, Does this increase of rapidity of percolation counterbalance the increase of contact gained by the respective heights of both menstruum and drug that the large batch occupies? In my opinion, the advantage in contact is counterbalanced by increased rapidity of percolation where large amounts are employed. I would not hesitate to attempt to conduct the operation of percolation with one pound of the properly prepared powder in confidence that the result would be as satisfactory as where I use 1,000 pounds.

8. Evaporation of the second part of the percolate is necessary in either case. As the amount of liquor increases by ordinary methods of evaporation, the large operator has to contend with a more continued application of heat out of proportion to that employed by the pharmacist on a small scale.* Perhaps the advantages of vacuum or other methods said to be enjoyed by some manufacturers will counterbalance the disadvantages they labor under in the direction I have named, but we have no direct figures to base our remarks upon. As I now look at the matter, the heat employed in the majority of cases wherein the officinal percolate is evaporated is not sufficient to injure the product. If trade operators are forced to devise special forms of apparatus, it is because of the disadvantage they labor under and to meet the pharmacopœial methods.

To sum up, I am convinced that pharmacists can prepare fluid extracts, of the present officinal strength, without difficulty and of standard quality. The manufacturer on a large scale, in my opinion, labors under disadvantages that are more than sufficient to counteract his advantages. Speaking for myself, I will say, one of the problems I have to contend with on a large scale is that of a positive knowledge of the product, as compared with a standard made in small amount. Also I have the uncertainties of manual labor, and the darkness of opaque percolators, and it seems probable that others are also encompassed with these perplexities. I do not hesitate to say, if the manufacturer can produce fluid extracts of pharmacopœial strength, the pharmacist will have little trouble in doing so. Care, attention, experience, education are required to produce standard fluid extracts in small amount, and, in addition, manufacturers have aggravations that are unknown to pharmacists.

That hundreds and, perhaps, thousands of persons who conduct apothecary stores will always purchase such simple preparations as fluid extracts is undeniable. That in many instances those of excellent pharmaceutical attainments and high standing will do so is probable. Circumstances seem often to necessitate such dependence on the trade maker, and I do not deny that forcible arguments can often be advanced in favor of qualified men purchasing instead of making. However, I, for one, am not now willing to admit that those courtesies, when extended to manufacturers, are in consequence of an inferiority of the pharmaceutical profession. My study of this subject leads to the opinion that trade makers of pharmaceuticals neither can nor do make better fluid extracts than the careful pharmacist. If our pharmacists find it to their interest to purchase instead of manipulate, manufacturers should, and, I believe, as a class, do appreciate the courtesy. It is a graceful compliment that these gentlemen extend by saying, "We have confidence that your products are equal to those we prepare ourselves," and should be so considered. Let us look at this matter in its proper light. Consider the fact, for fact it is, that the *standard* is made by pharmacists to conform to a product that can be easily made in small quantities by ordinary pharmacists. Let us not strike a blow at professional attainments by encouraging those who are interested in obtaining pharmaceutical educations in believing that they cannot, in pharmacopœial amounts, produce reliable pharmacopœial preparations. Let us not by any means, in so simple a class of preparations as the fluid extracts, permit such an opinion to become rooted in the minds of our young men. Perhaps in this matter I will stand nearly alone. I have reason to believe that many of my friends, both manufacturers and pharmacists, will differ with me. However, my opinions result from as careful a study of both sides of the question as I have been able to make with my opportunities, and I conclude that in officinal preparations manufacturers should aim to produce preparations that are only equal to those of the pharmacopœial standard. It seems, as I now view the subject, that from the *quality* stand it is a little presumptuous for manufacturers to say, "We make better preparations than you can," when the fact is, all that they can pretend to do and conform to authorized standards, is to *equal* the officinal preparations.

In thus considering this subject, I have endeavored to present the several phases as I have been confronted with them and as I present them to my classes. It strikes me that an impression that has been firmly engrafted in the minds of pharmacists should not be permitted to pass unchallenged without thoughtful consideration regarding the foundation of the assertions. The professional character of the pharmacist suffers enough, to make the best of it, and we should call a halt when questions arise as to our capacity for making good medicines of the simplest character. Take from us the privilege of making fluid extracts, tinctures, ointments, cerates, plasters, and such substances and we are undermined. That we are, to an extent, responsible for the present general opinion is evident, but we must not become pharmacists by name only. The appellation "Hamlet with Hamlet left out" is not pleasant to contemplate.

* See Amer. Pharm. Proceedings, 1886.

The Pharmacopœia Committee, appointed by the British General Medical Council at its recent session, consists of Dr. Quain (Chairman), Sir Dyce Duckworth, Dr. Aguilla Smith, Sir Walter Foster, Mr. Brudenell Carter, Mr. Collins, and Mr. Macnamara.

A DETROIT lady has sued a photographer for $10,000 damages for distributing her photographs as an advertisement for a cosmetic.

Commercial and Pure Amyl Nitrite.*

BY W. SIMONSON, OF CINCINNATI.

QUERY 34.—Samples of amyl nitrite have been found nearly free from the nitrous radical: what is the percentage of absolute amyl nitrite ($C_5H_{11}.NO_2$) in the best specimens of commerce, and how near a pure nitrite should a medicinal article approach?

The pharmacopœia gives a good description of the physical properties of this substance, tests for the identity of its parts, and fixes the limit of acidity, but does not name the process by which it should be prepared, nor adopt a standard of strength. The objects in answering this query are to show the average percentages of total nitrites, in terms of amyl nitrite, in the commercial article, thus determining the limit of strength practicable to adopt; to compare the results obtained by the assaying with those gotten by fractional distillation; and to verify the statement that this substance should be the product of the reaction between nitrous acid gas and well purified amyl alcohol.

Estimation of Amyl Nitrite.

Whenever this term is used, the statement refers to total nitrites calculated as amyl nitrite, $C_5H_{11}NO_2 = 117$. In such a complex mixture as the commercial article, more than one nitrite is usually present.

The method of assay is that of Allen, described in "Commercial Organic Analysis," p. 150–151, and detailed in the Proceedings of this Association for 1886.

Forty-one packages from seven makers were examined for percentage of amyl nitrite and subjected to the officinal tests. Results are shown in the following table, in which the first three are arranged in the supposed order of the quantity used, nothing being known concerning the remainder except that the seventh, being the production of a foreign maker of the highest reputation, is probably well distributed. If the two samples were fairly the average of other markets, our supply, from two domestic makers, is unequalled in strength and quality. According to the estimate of those from whom supplies were obtained, number 1 produces from sixty to ninety per cent of the total quantity consumed, yet it is the poorest of all those having an extensive sale.

Maker.	Number.	Per cent total nitrite as $C_5H_{11}NO_2$.	Sp. gr. at 15° C. water at 15° C. = 1,000).	Total acids as HNO_2.	Boiling Point.	Water.	Color.
A	1	13.31	.8550	....	....	—	Very pale yellow. Lighter th'n straw
	2	13.44	.8550	....	.....	00	
	3	13.06	.8515	....	.....	—	
	4	20.75	.8541	....	....	00	
	5	22.2	.8588	....	....	1–2 minims.	
	6	20.0	.856	....	....	2 minute drops.	
	7	13.7	.8519	....	Beginning at 70° C., rising irregularly to 128° C.	"	
	8	23.4	.8548	....		00	
	9	12.0	.8517	....		00	
	10	23.3	.8540	...		2 minute drops.	
	11	18.8	.8531	....	....	"	
	12	14.25	.8552	....	....	About ½ minim.	
	13	17.30	.8531	....	.....	00	
	14	14.2	.8454	....	.....	00	
B	1	84.0	.8778	.57%	.....	2 minute drops.	
	2	85.3	.8746	....	.....	"	
	3	85.0	.8767	....	....	"	
	4	85.0	.8746	....	.....	"	
	5	84.0	.3750	....	.....	"	
	6	86.9	.8760	....	90° C., rising quickly to 96° C. then constant.	"	
	7	84.5	.8780	....		"	
	8	86.5	.8760	....		"	
	9	85.8	.8760	....		"	
	10	79.5	.8781	....	....	About ½ minim.	
	11	96.0	.8814	....	.....	00	
	12	83.1	.8814	....	.....	2 minute drops.	
	13	85.6	.8765	..	.....	"	
C	1	75.4	.8822	.23%	....	"	
	2	73.9	.8830	....	.....	About ½ minim.	
	3	75.6	.8822	....	86° C., soon constant at 96° C.	" 1 "	
	4	83.4	.8800	....		2 minute drops.	
	5	76.5	.8822	....		"	
	6	82.7	.8800	....	....	"	
	7	74.2	.8831	....	.....	"	
D	1	39.0	.8613	....	.....	"	
	2	46.2	.8557	....	.....	"	
E	1	00 0	.8882	....	.....	"	
	2	0.00	1.0030	....	.....	"	
F	3	65.3	.8844	..	.....	About 2 minims.	
G	1	67.7	.8830	....	... .	Few minute drops.	
	2	66.7	.8830	....	.....		

"Sp. gr. 0.872 to 0.874" (U. S. Ph.).

The specific gravities given in the table were taken at 15° C., the standard volume being water measured at the same temperature.

The specific gravity of pure amyl nitrite is given variously by different authors, as between 0.877 and 0.902, the temperature of the standard volume being unknown.

Of commercial specimens, number 11, maker B, of 96 per cent purity, had sp. gr. 0.8814, but the influence of the small diluent is unknown; those of C next in strength, varied between 0.880 and 0.8831, higher sp. gr. going with lower strength; those of A lowest in strength, between 0.856 and 0.845, lower sp. gr. usually followed by lower strength. Number 1, E, had sp. gr. 0.8882, yet contained little more than a trace of nitrite.

A specimen made by this operator, carefully purified by fractional distillation until of constant boiling point, and believed to be nearly free from other nitrites and amyl ethers, has the sp. gr. 0.88135.

If sp. gr. of amyl alcohol, which forms the largest part of the diluent in most specimens, be accepted as 0.818, and that of amyl nitrite as 0.8814, then the officinal sp. gr. 0.874 would refer to a mixture containing about 88 per cent amyl nitrite and sp. gr. 0.872 to one containing about 85 per cent. But sp. gr. of most commercial samples can be no certain indication of quality, since other amyl ethers than the nitrite are present, especially if made by the nitric acid conversion.

"It boils at about 96° C." (U. S. Ph.).

The statements of the books on the boiling point of this ether are as greatly conflicting as those regarding specific gravity.

The boiling points of the first three makes given in the table, were obtained by using 4–5 C.c. contained in a narrow test tube about 12 Cm. long, fitted with a cork carrying a short delivery tube and a good thermometer, the bulb being just above the surface of the boiling liquid, heated by an oil bath.

In taking the boiling point of the complex liquid usually met with, more accurate and useful results are obtained by using a much larger quantity of liquid, about 15 C.c., the containing tube of such size as to leave the smallest allowable space between surface of liquid and the cork bearing the thermometer. The boiling point is taken as that temperature at which all air has been driven from the tube and ether has fairly begun to escape. The presence of fractions vaporizing much below 96° C. may then be shown, but if the quantity of liquid be small and the air space large, these will have been boiled off before the time of reading the temperature.

The specimen prepared for the purpose of this paper was vaporized completely at 96° C., the temperature rising slightly and very quickly at the close, due to overheating the vapor.

"On shaking 10 C.c. of nitrite of amyl with 2 C.c. of a mixture of 1 part of water of ammonia and 9 parts of water, the mixture should not redden blue litmus paper (limit of free acid)." This is the limit of total acidity allowed by the German and U. S. pharmacopœias, and corresponds to 63 per cent HNO_2.

In performing this test, the dilute ammonia is best measured into a tube holding but little more than the entire mixture, to exclude air as far as possible, the nitrite then measured in, and the tube closed by a cork bearing a small piece of litmus paper. If, after shaking, the paper is blue, the excess of alkali can be estimated, and the acidity calculated by difference. Results by this method, if not accurate, are fairly constant, and may be nearly correct.

All samples of A were much above the limit, due to exposure in making other tests; of B, slightly above half the limit; and of C, about the same as A.

A freshly-opened package of A gave 57 per cent HNO_2; of B, 23 per cent; and C not estimated, for lack of material.

"It should remain transparent, or nearly so, when exposed to the temperature of melting ice (absence of water)."

The results in the table were obtained by exposing the vials to a bath of ice-water for eight hours, and then noting the apparent quantity of water separated. Very few specimens stood this test absolutely, but the quantity of water was, in most cases, very small. Only in a few did it exceed about one-half minim from about three-fourths ounce of ether. The test, however, does not prove the absence of water, unless the sample is very rich, and contains but a small proportion of amyl alcohol. Number 8, A, when further examined by distillation, yielded over 2 per cent of water, with fractions below 90° C., and and fully 3 per cent below 100° C. In the same way, 1, B, gave less than one-fourth per cent, and 4, C, not more than a trace, the diluent appearing to be nearly free from amyl alcohol, and to be mostly amyl ethers other than the nitrite. The presence of water is properly considered to increase decomposition; and as it appears impossible to separate it by a temperature of 0° C., in presence of amyl alcohol, a well-made article should contain but little free alcohol, and the proportion might be limited by increasing the specific gravity so as to be from "0.878 to 0.881," insuring the absence of more than 5 per cent. A nearly pure ether keeps better than a poor one, as water taken up by washing can be removed almost completely by a temperature of 0° C.

* This paper was to be read at the Annual Meeting of the Ohio Pharm. Assoc., but as the MS. could not be completed in time by the author, it was afterwards ordered to be printed in the proceedings. We are indebted to the author for a copy. ED. AM. DR.

Fractional Distillation.

The results obtained by the assay process give no indication of the quality of the substance under examination, but refer simply to total nitrites calculated as amyl nitrites. Further knowledge of its composition may be obtained by a fractional distillation.

The apparatus used consisted of a wide-necked distilling flask, holding about 800 C.c., on which was mounted a 5-bulb Henninger tube, the delivery of which was connected with a small bent tube passing through a bath of ice-water, and vertically into the tared receiving flasks, also cooled by ice. The bulbs of the fractionating tube were not supplied with cups of gauze, as these could not be obtained for the first distillation, and it was necessary to treat all by an uniform process. This defect was compensated, as far as possible, by conducting the operation very slowly, the distillate passing, at all times, slowly in single drops, the ratio of flow-back to distillate being twenty or more to one, seldom falling to ten to one. Separations effected under these conditions, while very incomplete, are sufficient for the present purpose, but the principal value of the work has been to establish a series of boiling points, and state the assay values and other properties of fractions taken at succeeding temperatures.

The boiling point of this ether is described by some as being constant, and by others, as beginning at 90° C., and rising to 100° C. or beyond. According to Allen ("Com. Org. Analysis," p. 160), "a fairly pure article will yield fully 80 per cent of its original measure between 90° and 100° C., and should leave no very considerable residue at the latter temperature. . . . Incomplete distillation at 100° C. is due chiefly to the presence of amyl alcohol, heavy traces of which may apparently be found by partial decomposition of the nitrite during the distillation. Hence commercial amyl nitrite of good quality may leave a residue of 5 to 10 per cent at 100° C.

425 Gm. of A, 445 Gm. of B, and 440 Gm. of C were fractionated under the described conditions. The data obtained are set forth in tables [which are omitted here, for want of space, but] of which the essential features are specified below. In distilling B, the process had to be forced somewhat, and the separation is less perfect than it would have been could more time have been allowed, but the remaining two were treated with all care possible.

Ether A assayed the equivalent of 23.4 per cent $C_5H_{11}NO_2$, being the richest of that brand. Yet all nitrites came over at 90° C. Of the three fractions, the first produced but a slight effect on the head; the second, a greater effect than the original, but differing in kind; and the third, a still greater effect, yet far inferior to that of the pure ether, and not nearly identical with it.

The 90°–100° C. fraction amounted to less than five per cent, the exact amount unknown, as the fractionating tube broke at 93° C., involving some loss. But the fraction had not the peculiar effect, and its vapor was quite colorless.

The 128°–132° C. fraction formed nearly one-third of the original quantity, and had the characters of an impure amyl alcohol.

Ether B gave less than 6 per cent of distillate below 90° C., and left but 14 per cent at 100° C., and this might have been reduced by a slower distillation. Both specific gravities and assay values fell gradually toward the close, pointing to small and increasing proportions of amyl alcohol.

The small fraction passing between 128° and 132° C. was mostly amyl alcohol, and contained some amyl ether. Residue at 132° C. was a thin, blackish liquid.

Of fractions collected between 90° and 100° C., that including the temperature of 96° C. had greatest physiological effect.

Ether C is known to have been prepared by the nitric-acid conversion.

Throughout the fractions, both assay values and specific gravities are reduced toward the end. The variations in the latter are much less than is usual, indicating the absence of much amyl alcohol; and the 127°–132° C. fraction was of full brown-yellow color, had high specific gravity, and did not induce cough.

The results obtained may be compared as follows:

Maker	Distillate below 90° C.	Between 90°–100° C.	Above 100° C.	Total	Loss
A	23.2	About 5.0	67.6	95.8	4.2
B	5.75	80.1	13.05	98.9	1.1
C	8.35	75.1	15.65	99.1	.9

They show that two domestic brands of amyl nitrite are of fairly good quality, and are made from a moderately well purified amyl alcohol, or are carefully fractionated from the first product. But one make, and that the one most largely consumed, is evidently prepared from a very impure alcohol, or, at least, is put on the market unrectified. The mixture is wholly unfit for medicinal use, and this may account, in part, for the neglect into which this article has fallen in therapeutics.

Regarding the preparation of this chemical, authors usually quoted are at variance, if not contradictory. The weight of authority seems to be in favor of the nitrous acid conversion, and, more recently, Williams and Smith have shown the necessary details for obtaining the largest yield and purest product (*Pharm. Journ. and Trans.*, Dec. 12th, 1885; *Am. Journ. Pharm.*, Jan., 1886). These experimenters recommend acting upon purified amyl alcohol with the gas given off by reaction between nitric acid of sp. gr. 1.350 to 1.360 and arsenious oxide, the alcohol being carefully kept cool during the conversion.

In accordance with this plan, a quantity of amyl nitrite was prepared. Much difficulty was found in getting a good alcohol, suitable for this use. Much of that met with appeared to be mainly the tailings of the rectification of fusel oil. The best commercial specimen obtainable had sp. gr. 0.8181, and boiling point (taken on a very small quantity) beginning at 125° C., but soon constant at 127° C. These properties indicating a well-rectified product, it was used without further purification, but afterward proved to have been very impure.

The apparatus used consisted of a retort about half filled with arsenious oxide in coarse powder, connected to a bottle of same capacity, to the bottom of which the red gas passed and thence into a tall narrow cylinder filled not more than two-thirds full with amyl alcohol. The retort is gently heated and the mixed gases, passing out at a temperature always below 30° C., deposit in the empty bottle any small quantity of liquid carried over before acting on the alcohol, but constantly cool by standing the generator in water. The passage of gases is stopped as soon as the contents are faintly greenish tinged. After regulating the heat, conversion goes on without further attention except stopping the process. The liquid remains clear up to a strength of about 50 per cent, when water, formed by the reaction, renders the liquid turbid and slowly collects at the bottom of the generator.

18.75 ounces of amyl alcohol yielded 24 ounces of nitrite or 96 per cent of the theoretical yield. After washing well with a 20-per-cent solution of sodium carbonate, the product assayed, in two estimations, the equivalent of 102.2 and 101.0 per cent, $C_5H_{11}NO_2$. Rectified in an ordinary retort, 20 per cent passed under 90° C., 75 per cent followed under 100° C., leaving a residue of 1.2 per cent assaying 2 per cent amyl nitrite.

The first fraction had sp. gr. 0.8869 and assayed 107.5 per cent amyl nitrite. After washing with sodium carbonate solution, and cooling to 0° C., sp. gr. was 0.8843 and assay 107.6 per cent. During its distillation, the pale yellow liquid became full orange-yellow and abundant red fumes were given off. The vapor, at first deep orange, became, as distillation advanced, very pale, appearing colorless in depth of 150 Mm. and very pale orange in 1,250 Mm. The 90–100° C. fraction weighed 465 Gm. or 75 per cent of the crude = 87 per cent of alcohol used in preparing it. Washed with an equal volume of sodium carbonate solution in three portions and cooled to 0° C. for 12 hours, not more than 2 C.c. of water separated. The product had a pale yellow color; a purely ethereal, not pungent nor nitrous odor, assayed 101.2 per cent amyl nitrite and had sp. gr. 0.8818. Both assay value and sp. gr. showing the presence of nitrites of lower molecular weight, a quantity of the ether was next examined by fractional distillation, using 414 Gm.

	Fraction number.	Temperature.	Per cent Weight.	Per cent Total Nitrites as $C_5H_{11}NO_2$.	Specific Gravity at 15° C.	Color.	Color of Vapor.
Product of	1	80° C. to 90°0 C.	11 11				
Nitrous Acid Conversion	2	90° C. to 92° C.	8.37	102.66	0.8828	Pale yellow.	Very pale orange.
Process of Williams & Smith	3	92° C. to 94° C.	8.77	100 31	0.8830	Pale yellow.	Very pale orange.
Pale yellow neutral	4	94° C. to 95.5° C.	20.92	100.14	0.8828	Pale yellow.	Very pale orange.
Sp. gr. 0 8818 Assay 101.12%	5	95 5° C. to 96° C.	45.00	100.01	0.88135	Pale yellow.	Very pale orange.
$C_5H_{11}NO_2$ Distillate between	6	96° C. to 97 C.	1.36	93.8		Pale yellow.	Very pale orange.
90° C. & 100° C. = 84.4%	7	Above 97° C.				Slightly brownish yellow.	
Loss = 2%		Residue.	2.46	59.4			

Fraction 1 was lost at once by breakage, hence its properties could not be determined, but in the following ones sp. gr. remained nearly constant until No. 5 gave 0.00135. Assay values, however, fell gradually until No. 5 was as near 100 per cent as the assay method would indicate.

These results show that the product of the manufacturing process consists of little other than nitrites. They show, also, that other nitrites than amyl are present, indicating that an impure alcohol had been used. The remaining portion of the supply was then fractioned, when, as was expected, the liquid proved to be very complex. 312 Gm. gave 8 per cent between 90° C. and 105° C.

sp. gr. 0.851; 32.5 per cent between 113° C. and 127° C., sp. gr. 0.8134; and 52 per cent between 127° and 129° C., sp. gr. 0.8154, leaving a residue of 7.3 per cent, sp. gr. 0.817, which probably would have distilled under 133° C.

These fractions distilling between 90° C. and 127° C. account, in great part, for the low boiling fractions in the crude amyl nitrite. The results would indicate that by process recommended pure amyl alcohol of constant boiling point will yield a nearly pure amyl nitrite, also of constant boiling point, and that that temperature is 96° C., the sp. gr. being about 0.8813–0.8814. Owing to lack of sufficient material, this supposition cannot be verified or disproved at present, but may form the subject of a note on a future occasion.

In view of the facts brought to sight, it would seem that the pharmacopœia recognizes an ether very far from pure, and much below the quality of at least one domestic brand. The statement of the pharmacopœia, "When freely exposed to the air, it leaves a large residue of amyl alcohol," does not apply to specimens from this source, nor to that prepared for this paper, the former leaving, at end of five hours, but a small residue from 10 C.c. placed in a watch glass, and the latter scarcely more than an oily film. Specific gravity is low, allowing a large admixture of amyl alcohol, and the limit of acidity much above the commercial specimen referred to, and perhaps still farther above what is easily possible.

Considering the great ease with which the substance can be prepared, excluding amyl alcohol entirely and including other amyl ethers in traces only, it would appear possible to adopt a quantitative test requiring a very pure ether, if not nearly absolute. This, with a lower limit of acidity and higher specific gravity and a close definition of method of taking the boiling point, would describe and require a much better article, and these requirements might readily be met by manufacturers of the commercial ether.

CINCINNATI, June 30th, 1887.

The Medicines of Medicine.*

BY EMLEN PAINTER, PH.G.

THIS article was written with the intention of contributing it to a medical journal, but I have since decided to first bring the matter before the pharmacists of the country, and I now have the honor to present the paper to this representative body.

The object of the article is to throw some light, if possible, upon one of the most important adjuncts to the healing-art—the medicines prescribed by the doctors of medicine—not to abuse, however, in any degree, the confidence of the medical practitioner reposed in the pharmacist, nor to criticise the prescriptions of any physician.

I desire only to review the subject from a professional and scientific standpoint, to advance a progressive theory, and to point out, if possible, the quagmires yawning in every direction to entrap the unwary. For obvious reasons, the pharmacist has a superior point of observation from which to view this subject, otherwise I would hesitate to put forward my views and criticisms on a matter so important to medicine.

From a review of prescriptions of leading medical men in different localities for a period of twenty years and more, it is an observable fact that in proportion as scientific research has brought forward the different distinct principles of drugs employed in medicine, so have their separate principles grown more in use, and the drug itself, and galenical preparations of the crude drug, are less and less prescribed. It does not require a prophet to foretell that it is but a question of time when the separate and definite principles only will be employed, and that the inert, objectionable, vague, and varying substances will be discarded. It is also my conviction that eventually, through developments in scientific research, all remedial agents (other than food products) will be presented in their simplest form, and that preparations of crude drugs and mixtures, as primary articles of medicine, will become obsolete. I look upon any obstacle in the way of development in this direction as a serious drawback to medical and pharmaceutical knowledge, and a still greater detriment to suffering humanity.

As evolution proceeds in this course, the more learned and skilful of the medical fraternity will make their selection from the simples to suit the individual case under treatment, like the true marksman who singles out his game and with unerring aim brings it down. There will then follow all grades, down to the medical man who prescribes by culling over old prescriptions; or, if the ready-made prescriptions which now flood the market are not then extinct, he may prescribe one of these (concocted possibly by a wholesale drug firm or a grocer), as, with an old-fashioned blunderbuss, he fires at the flock.

In this evolution above referred to, the pharmacist must also take an active part; those in the vanguard, with the aid of the chemist, will devote themselves assiduously to separating the chaff from the grain; they will provide the means to enable the prescriber to make his selection of simples for whatsoever form of administration desired. And from this class of pharmacists, as of the physicians, all grades will be found down to the dispenser who will send away a legitimate prescription because of his lack of knowledge, or facilities for dispensing it, and who would be willing to content himself with handing out, or counting out, factory-made prescriptions, or the selling of other cure-all nostrums.

Although this great work of resolving remedial agents into their separate principles possessing distinct or different physiological properties goes on, and untold advantages to medicine and pharmacy are accruing from it, yet the benefits are lessened and the work seriously retarded, medicine and pharmacy are demoralized and besides saddled with a stupendous burden by the manipulators of these remedies, who force their mixtures upon us as primary medicinal agents.

The magnitude of this abuse, the absurdity of it, and its demoralizing effect can perhaps better be shown by first reciting a few brief statistics.

There are in the United States not less than 160 different so-called "manufacturers of pharmaceutical preparations," who in reality, for the most part, are but mere manipulators and mixers of drugs. At least 25 per cent of this number have offices in New York, and a still larger percentage send out their drummers to the medical men in this vicinity to distribute samples, to extol their wares, and to urge upon the physicians to designate their particular "make" in prescribing.

These 40 odd manufacturers include in their lists of preparations not less than the total sum of 36,500 mixtures, each of which is designated by some particular name, and so prescribed.

The dispenser is expected to be prepared to furnish any one of this list of proprietary articles at a moment's notice, and assuming that on the average five new ones are called for every day, it would take him just twenty years to have handled the whole stock, by which time some of it certainly would have gotten a little bit stale.

How absurd to expect the pharmacist to be burdened with this immense quantity of useless truck, or to expect the physician to tax his mind with the consideration of it. Yet there is not a single day in this great city but that hundreds and hundreds of these articles are prescribed and dispensed. I find, upon examining prescription files of recent date, that a large percentage of the prescriptions are for proprietary articles. If it were not for scientific research, which still goes on, notwithstanding this hindrance; if it were not for the new discoveries and the new lights which occasionally flash out even in the midst of all this débris, it would seem that we were drifting back to an infinitely worse state of empiricism than prevailed in the mediæval ages.

Let us now review a few of these factory-made prescriptions, making the selection from those which are most frequently prescribed by professional men, and therefore presumably the best of the whole list.

Of the pills (comprising the greatest number of mixtures) the following prescription is one very frequently seen:

℞	Formula.
Pil. aloin, strych. et belladon. comp. (W. H. S. & Co.'s) No. xxiv.	Aloin gr. $\frac{1}{8}$ Strych gr. $\frac{1}{60}$ Ext. bellad. gr. $\frac{1}{8}$ Ext. casc. sag. gr. $\frac{1}{2}$
Sig. One or two a day.	

or the name within the bracket may be written P. D. & Co., McK. & R., W. R. W. & Co., B. & C., W. & H., H. T. & Co., T. & Co., H. B. & W., W. & B., M. & Co., S. & D., or other makers innumerable. These pills are offered dressed up in various coats, and in various forms. Now, what is there in this formula that the pharmacist and dispenser cannot prepare it? What is there in it that bushels of these pills are required to be kept on the shelves of the pharmacist, in the warehouses, and in the wholesale drug houses, getting old and dry and hard, and otherwise unfit for dispensing? What is there in it that manufacturers by the score should claim a proprietary right therein, insomuch as to claim that those of their particular make are not only equal to the best, but are superior to all others? And many of these manufacturers further add insult to injury by cautioning the prescriber to look out for substitutions by the unprincipled druggist, to examine the coating or the shape of the pills dispensed and catch the rascal in the act who would dare compound the prescription himself, or to put up Brown's make when Green's make was ordered.

The thousand and one other formulæ for pills are open to the same criticism, others, indeed, standing in a worse light, and savoring still more of the clap-trap nostrum business, being known and prescribed as a specific for some ailment, as, for instance, W.'s Antisyphilitic Pills, T.'s Antidyspeptic Pills, M.'s Rheumatic Pills, etc., etc.

Of the elixirs, wines, and syrups, a single one will serve as an illustration, as they all come in the same category:

℞ Elix. Ferri, Quin. et Strych. Phos. (.....) ℥ iv.
Sig. One teaspoonful three times a day.

* Read before the American Pharmaceutical Association.

This elixir is probably the one (of the multitude) most frequently prescribed, and there being no recognized strength or formula for this preparation known to the manufacturers, each produces an article peculiar to himself. These elixirs vary in alkaloidal strength, and have a still greater variation in the iron compound. The most popular one, perhaps, although purporting to be an elixir of phosphates, has been proven to contain no phosphate at all, and to be also deficient in the alkaloids claimed to be contained in it. A solution of citrate of iron and quinine in simple elixir, with a solution of strychnine added, will make a preparation so near like the one referred to that it is doubtful if an analyst even could determine a difference. This latter combination makes an elegant and stable preparation, and no doubt one of therapeutic value, but would not the prescriber be better served by ordering the quantity of cit. iron and quinine and strychnine desired, to be dissolved in a given quantity of simple elixir? The iron phosphates in solution are very prone to change, especially on exposure to the light. If the physician, however, desires a phosphate of iron with this combination of alkaloids, of standard and definite strength, I would respectfully refer him to the N. Y. and B. Formulary for this as well as for other kindred preparations.

I do not mean to imply, however, that all of these factory-made preparations are not true to name or to formula, but I do say that very many of them are not, and that the physician who prescribes them is in some degree groping in the dark.

There is still another class of articles approaching more closely even to the secret remedies which are so justly tabooed by the medical profession, and yet these articles are prescribed throughout the length and breadth of our land, although they are more insidious and damaging in their character than the worst of the other nostrums. The authors of these preparations not only claim proprietorship in them, but also in their very names, and, notwithstanding this, men of science will prescribe them who would be shocked at the thought of prescribing "Bear's Cough Syrup" or Bonnet's Sarsaparilla. If they would but give this class of articles a second thought, they could not fail to see how unprofessional they are, and how serious a clog to scientific advancement.

The names of these articles, as in the other instances, are legion; they generally include the name of their promoters or some fictitious name selected, or else their authors coin new names for old articles, and lay claim to the whole business as exclusively their property and as primary articles of medicine.

As an example of this class, take "Bromidia," which is daily prescribed by medical men, and used largely by the laity as well. In the advertisements of this article, I observe the formula is given. "Every fluid drachm contains 15 grains each of pure chloral hydrat. and purified brom. pot., and ⅛ grain each of gen. imp. ext. cannabis ind. and hyoscyam."

"Dose, ½ to 1 fluid drachm in water or syrup every hour until sleep is produced."

The "indications" given are almost as numerous as will be found on the yellow wrappers of the cure-all remedies so liberally advertised in the daily papers, and the only real difference is, this article is advertised for the eye of the medical profession, the other to the general public; they both point out the symptoms of ailments they are intended to relieve or cure, and they are equally unprofessional. I know it is claimed for this article that it is not a secret preparation. The proprietors give away the formula and retain for themselves nothing but the hollow name, upon which they spend thousands upon thousands of dollars in advertising it: how magnanimously generous! I presume, it is to repay them for such generosity that medical men prescribe "Bromidia" and like articles. If the preparation be true to the formula given, what other excuse can physicians have for prescribing a proprietary article? If the indications be such that the prescriber desires his patient to take 15 grains of pure chloral hydrate, 15 grains of purified bromide of potassium, and ¼ grain each of genuine imported extract of cannabis indica and hyoscyamus, why does he not write his prescription for it instead of prescribing a "patent medicine"? One may answer that he cannot carry the formula in his head, that this combination has had a satisfactory effect, and he desires to use it again. Well, then, I would respectfully suggest that he write for elix. chloral comp., after the formula for "Bromidia," and have it so dispensed.

If, on the other hand, the article is not true to formula given, then it is a deception and a fraud, and should on this score be obliterated from the vocabulary of medicines, as well as all others of its ilk. In this connection, I would point out the important fact that the medicinal properties of "genuine imported extract of cannabis indica" reside in a volatile oil and green resin, which are not held in solution in a liquid no stronger in spirits than "bromidia," and the presence of 20 per cent of salt further interferes with solution; and, moreover, if it were in solution or even suspended, the preparation would have a greenish tint.

This article was not singled out for any particular reason, further than that, under my observation, among the preparations of this class, it led in the frequency of prescriptions for it. There are scores of other like preparations which might just as well have been selected.

To conclude, I contend that the whole of these 36,500 proprietary articles above referred to are totally unworthy the distinction of being prescribed by medical gentlemen; that they are directly at variance with scientific progress; that their promoters have contributed absolutely nothing of value; and that, had they never existed, both medicine and pharmacy would have this day reached a higher plane in the development of science.

These so-called manufacturers of pharmaceutical preparations have simply gathered together a lot of old prescriptions of different physicians, and these, with the mixing together of sundry principles, which their peers have eliminated, constitute their whole stock in trade. In this long list of preparations, they have originated nothing, except their grand scheme of appropriating the work of others, perverting its application, and, by a system of advertising, saddling it upon medicine and pharmacy, which bear the burden, and these schemers enjoy the pecuniary benefits. The load is becoming more and more burdensome, and I feel that we have submitted to the imposition long enough, and that we should rise up and drive the enemy from their strongholds, which can readily be done by concerted action.

Theirs is a garrison whose commissary stores are in the hands of their natural enemy. Cut off their supplies and they will very quickly "seek other fields and pastures new."

NEW YORK, June, 1886.

Irish Moss Gelatin.*

BY EMLEN PAINTER, NEW YORK.

As a member of the National Formulary Committee, it fell to my lot to investigate the emulsions, and in pursuance of this duty, I made samples after all the different formulæ for emulsions that had come before us.

A mucilage of Irish moss appeared to the committee to be the most satisfactory emulsifier for fixed oils. Although it did not so minutely divide the particles of oil as some other agents, it made a more uniform and permanent emulsion in the hands of different manipulators than any other agent tried, and it was finally adopted by a unanimous vote of those present.

The chairman of the committee suggested that it would be very desirable if this mucilage could be preserved or more readily prepared than by the somewhat tedious and roundabout method in use. To this end I made a few experiments. Alcohol being satisfactorily employed to preserve the emulsion, it occurred to me that the mucilage might possibly be preserved indefinitely in the same way and thus kept ready for use whenever desired. Upon trial, however, I discovered that when the quantity of alcohol used in the formula for emulsions was added to the mucilage first, the emulsifying property of the mucilage was very materially lessened—and in fact, it was rendered totally unfit for the purpose.

I next took a quantity of mucilage of Irish moss, as prepared for making the emulsion, and evaporated it in a water bath to a thick syrupy or semi-fluid consistence and with a small brush spread it upon plates of glass to dry. In the absence of a drying closet, these plates of glass were placed over gas stoves, elevated a foot or more above the flame, and with a sheet of wire gauze intervening. In a short period of time the mucilage or rather gelatin—as it may more appropriately be named in its changed form—became hard and dry and began to peel off of the plates in the hottest places, in thin wafer-like scales, as shown in the samples here before you.

The yield of gelatin from the Irish moss used (which, however, was not completely exhausted by my mode of manipulation) I found to be about 70 per cent. In the mucilage for emulsions, made in the same way, 60 grains of moss was used in making five ounces of mucilage, this quantity being required to make one pint of a 50 per cent emulsion of oil. Therefore, 40 grains of the Irish moss gelatin practically represents the quantity required to make a pint of emulsion of oil.

Whilst this gelatin is but slowly and sparingly soluble in cold water, it dissolves completely in boiling water, and a mucilage may in this way be prepared in a comparatively short time.

The following formula was proposed for

Emulsion of Cod Liver Oil.

Irish Moss Gelatin	40 grains
Boiling Water	5 fl. ounces
Cod-Liver Oil	8 " "
Syrup Tolu	2 " "
Alcohol	1 " ounce
Oil Sassafras	10 minims
Oil Wintergreen	10 "
Oil Bitter Almond	2 "

* Paper read at the Annual Meeting of the Amer. Pharm. Assoc. in Cincinnati.

Dissolve the gelatin in the boiling water, taking pains to have it completely in solution, transfer the mucilage formed to a pint bottle, gradually add the oil in divided portions, and shake the bottle vigorously after each addition and until a perfect emulsion is formed, then incorporate the syrup, and lastly add the alcohol in which the essential oils have previously been dissolved, and shake well together.

If preferred, this emulsion may also be made in a mortar in the usual way, and it is probably better to let the mucilage become perfectly cold before proceeding further with the emulsion. A sample made after the above formula is here presented.

Irish moss gelatin may be readily prepared in a small way by the following method:

Take of good bleached Irish moss a convenient quantity, wash it well with cold water, and place it in a boiling-water bath, with about fifty times as much hot water, stir frequently, and continue the heat for about fifteen minutes, then transfer the mixture to a strong muslin strainer of open texture, and with moderate pressure strain off the mucilaginous liquid. To obtain a larger yield, the undissolved portion may be returned to the water-bath and treated a second time with about one-third the quantity of water and strained as above. The strained liquid is then evaporated in the water-bath to a proper consistence in the manner before described, and spread upon plates of glass to dry.

The gelatin prepared as above is designed only for emulsions or other opaque mixtures. Irish moss mucilage, however, is admirably adapted for other pharmaceutical uses.*

If a perfectly clear mucilage is desired, the solution of Irish moss must be filtered through paper before evaporation. This may be readily accomplished by first diluting the mucilaginous liquid before described with two or three times its volume of water; the filtration will be greatly accelerated also by loosely filling the plaited paper filter with absorbent cotton before pouring in the liquid.

Some further experiments were made with the view of producing Irish moss gelatin by a process adapted to a more extended scale of operation, entailing less labor, and with the endeavor to furnish an article suitable for any purpose for which the gelatin is useful. I made use of a percolator which I had previously constructed for making syrup of coffee. It consists of a cylindrical metallic percolator, 18 inches high, tapering slightly, and from 4 to 6 inches in diameter. This percolator is surrounded by a water-jacket. The lower extremity of the percolator terminates in a tube $\frac{3}{8}$ inch in diameter, which is bent at right angles and passes through the side of the water jacket, the tube terminating in a $\frac{3}{8}$ inch bib. I had made of "cheese cloth" a long conical-shaped bag of about one-half the capacity of the percolator. This bag was filled with selected Irish moss (holding $\frac{1}{4}$ pound), which had been previously washed in cold water, then suspended in the percolator, the water-jacket and percolator both filled with water, and the apparatus placed over the fire. After being kept at the boiling temperature for about two hours the bib was opened and a perfectly clear mucilaginous liquid drawn off, which upon evaporation and spreading upon plates of glass, as before described, yielded a beautiful transparent gelatin. This gelatin, when dissolved in hot water, makes a perfectly clean mucilage, which I have the pleasure to here exhibit.

The Irish moss will not be nearly exhausted by this one operation, but the percolator can be repeatedly filled, heated and drawn off as before, until nearly all the soluble portion is obtained.

The water-bath is not absolutely necessary in making the mucilage in this way, although I found it to make a nicer product than without it, using this same strainer cloth; if a thicker strainer was used it would possibly make as clear a solution without as with the water-bath.

For convenience and a saving of much labor, the mucilage may be drawn directly into shallow trays, and these placed in a well-heated drying closet, or by other suitable means evaporated to dryness. Thicker sheets of gelatin are obtained by this method, which answer every practical purpose; a little longer time only is needed to dissolve them.

NEW YORK, August, 1887.

Melinit. The great bug-bear of the warfare of the future, the new explosive *melinit*, which consists, chiefly, of a mixture of ether and picric acid, has already reached the end of its notoriety. It has been conclusively ascertained that the mixture gradually loses its explosive properties, by reason of a setting free of nitrogen or of nitrous acid. The stock accumulated in France, which has cost the snug little sum of fifty millions of francs, is being destroyed by order of the government. It seems that the people who profited most by the experiment were the German manufacturers of the ether and of carbolic and picric acids.

* See paper read before Phar. Society of G. B. by Peter Boa.—Phar. Jour. and Trans., May 21st, 1887. AMER. DRUGG., July, 1887, p. 122.

The Percentage of Ethyl Nitrite in the Washed Nitrous Ether of the Pharmacopœial Process for Spirit of Nitrous Ether.*

BY W. SIMONSON, OF CINCINNATI.

THE pharmacopœia directs that its spirit of nitrous ether shall contain 5 per cent of the crude ether obtained by its process, and shall show by an assay method given, at least 4 per cent of absolute ethyl nitrite. In other words, it states that this impure ether contains at least 80 per cent of pure nitrite.

It has been shown by Parsons that this washed ether contains ethyl acetate as well as nitrite. The proportions, theoretically, are 63 per cent ethyl nitrite, and 37 per cent ethyl acetate, and he states (NEW REM., Sept., 1883, p. 259) that "careful quantitative experiments give results quite closely in accord with this supposition."

In a paper read before the Ohio Pharm. Assoc. meeting at Springfield, 1886, this operator showed that the commercial concentrated nitrous ether, except one make of 90 per cent (certainly not U. S. P.), and one which was so poor as to be worthless even when considered as a spirit, varied between 59 per cent and 28 per cent total nitrites stated as ethyl nitrite. These varying results, facing the statement of Parsons that the process yields a product of quite constant composition, and failure after some search to find any published statements on the percentage of nitrite in the washed ether, have prompted the present work. The difference between the product required by the pharmacopœia and that obtained by its process is becoming generally well known, and has proven a source of trouble between manufacturers and those consumers who aim to maintain the officinal standard. Hence it is very desirable that the error should be corrected at the next revision. With the purpose of supplying data for such change, application was made to all makers of the concentrated nitrous ether, whose product seemed to be made by the U. S. P. method. One replied, refusing to furnish material under any condition, and from others no answer was obtained, except one who was interested in the subject. From this one manufacturer, and from another, who makes and sells the spirit but not the ether, supplies were finally obtained. The latter furnished the first 25 in the following table:

Number.	Per cent nitrites as $C_2H_5NO_2$	Per cent nitrites in re-washed ether.	Loss by re-washing. Volume.	Loss by re-washing. Weight of $C_2H_5NO_2$	Per cent total acids as HNO_2.	Number.	Per cent nitrites as $C_2H_5NO_2$	Per cent nitrites in re-washed ether.	Loss by re-washing. Volume.	Loss by re-washing. Weight of $C_2H_5NO_2$	Per cent total acids as HNO_2
1....	28.8	43.9	30%	2.5%	....	21....	45.8	69.7	29%	7.5%	....
2....	30.8	57.5	50	7.0	....	22....	23.0	33.4	33	2.5	....
3....	30.2	39.9	28	5.0	....	23....	38.0	61.0	40	3.5	....
4....	39.3	45.2	22	10.0	....	24....	34.8	57.9	43	5.0	....
5....	45.8	67.1	34	3.2	....	25....	32.0	43.4	33	8.5	....
6....	28.7	51.0	29	7.0	....	26....	37.2	68.1	47	9.0	1.95
7....	41.0	67.8	43	6.0	....	27....	21.75	39.6	52	12.5	4.3
8....	42.8	68.1	40	5.0	....	28....	33.90	63.7	52.5	2.0	2.1
9....	59.4	71.4	21	5.0	....	29....	18.55	33.5	54.5	17.0	4.3
10....	40.8	56.5	30	3.0	....	30....	21.0	38.6	52	11.5	4.6
11	44.6	69.4	36	1.0	....	31....	22.6	38.5	54	21.5	4.1
12....	50.4	58.0	17	4.0	....	32....	37.9	64.5	46	8.0	2.0
13....	52.4	70.0	28	4.0	....	33....	35.9	64.3	45	2.0	1.9
14....	38.9	53.6	29	3.0	....	34....	35.2	60.6	40	11.5	2.0
15....	48.5	67.8	30	2.5	....	35....	20.7	37.4	52	13.5	6.4
16....	61.1	77.0	23	3.0	....	36....	18.8	35.7	54	17.0	4.1
17....	43.0	68.0	37	2.0	....	37....	33.55	61.8	47	2.0	1.9
18....	45.3	63.3	32	4.0	....	38....	21.7	38.8	53	16.0	4.3
19....	43.3	55.8	25	4.0	....	39....	37.75	64.1	46	7.5	1.9
20....	41.8	52.6	22	2.0	....	40....	32.55	61.0	47	2.0	1.9

All these were assayed while but recently made and nearly free from acid. The last 15 were prepared in October, 1886, and examined August 15th following. These samples were the washed distillate after dilution with an equal weight of alcohol, so that the figures for percentage strength must be doubled. At the request of the maker, the total acids in these were estimated and stated as nitrous acid, HNO_2. As specimens were preserved by an equal quantity of alcohol, they were in much better quality than the undiluted ether at the same age, though containing an average of 3.2 per cent acids, as nitrous acid.

The method of assay for nitrites is that of Allen, measurement of NO evolved from a mixture of a known quantity of the ether to be tested with a strong solution of potassium iodide and a dilute acid. The correction for solubility is 0.3 C.c. NO for each 10 C.c. of liquid in the nitrometer tube.

The percentage of total acids, in terms of nitrous acid, were found by titrating very rapidly with deci-normal alkali from 1 to 2 grammes in about 30.0 C.c. alcohol. The quantities stated in the table are the lowest that could be obtained in three estimations of each specimen, the experimental error rarely exceeding 0.1 per cent. The operation is attended with some difficulty. Using a 5 per cent dilution and deci-normal alkali, with phenolphthalein as indicator, a point is soon reached, alkali being added rapidly, when the liquid is fairly pink throughout, very quickly fading. A further small addition of alkali renews the color, now fading more slowly, to be reformed by a still smaller quantity of alkali, and these reactions may be kept up for some time, the end reaction vanishing.

* Paper read at the Annual Meeting of the Amer. Pharm. Assoc. at Cincinnati.

The color also fades—that is, alkali is consumed—even if in large excess, in absence of air, though more rapidly if exposed, doubtless through saponifying of ethyl nitrite as well as formation of more free acid. In making assays, as alkali may be consumed through these two causes, thus increasing unjustly the calculated amount of free acid, the end reaction has been taken as that point at which, alkali being added very rapidly, the pink color persists a moment after shaking. As the results have not been checked by any other method, they may be held as only approximate.

Of the first series, variation is from 23 to 61.1 per cent, or as 1 to 2.66 per cent, average being 41.6 per cent. The portion soluble in an equal quantity of water was from 17 to 50 per cent, but loss from re-washing was usually very small. Of the second, figures doubled on account of previous dilution of specimens, it is from 37.1 to 75.8 per cent, or as 1 to 2.04 per cent. The portion soluble in water is mostly alcohol, causing, with some exceptions, a large loss of ethyl nitrite by re-washing.

These are the variations found in a year's production in one factory and in a month's in another. They are believed to cover variations that might be found in a much larger number of specimens and from more sources. If the proportion of ethyl nitrite is the chief indication of medicinal value, these variations are too great and form a subject for due consideration. Either the process must be modified in some of its details, or final dilution be based on assay of the washed ether. Did the value of the spirit depend solely on ethyl nitrite, then the method might well be replaced by that detailed by Professor Painter at last year's meeting. This operator has had no experience with this process in making this ether, but has repeatedly obtained a nearly pure nitrite in converting amyl alcohol.

Fluid Extract of Licorice Root.*

BY G. W. KENNEDY, POTTSVILLE.

QUERY No. 11.—What is the best and most permanent menstruum for fluid extract licorice (root)?

In order to arrive at a satisfactory conclusion in framing or constructing a formula for a fluid extract of this drug, it is absolutely necessary to take into consideration the principal constituents of the root, and their best solvents, and when you are in possession of this knowledge there should be no trouble experienced in preparing a fluid extract containing the essential principles of the drug, and one which should remain unchanged, holding permanently the desirable constituents in solution. There is nothing more unsightly in the shop of a pharmacist than a bottle containing some galenical preparation of which probably one-eighth is a precipitate, deposited most likely owing to the unskilful and unscientific manner in which the preparation was made. Not only is the appearance objectionable, but who knows but this precipitate matter may contain the very substance which should be held in solution, and which should be given in divided doses, as dispensed in compounding the prescriptions of physicians, and not all in a few doses which would probably be the case if the deposit was dispensed from the last few ounces in the bottle.

I find in taking a retrospective view of the pharmaceutical literature of this old and useful drug, licorice, that considerable has been written in regard to its properties, and the best means of preparing the various preparations of it. In the effort to render the medicines palatable in these days of pharmaceutical elegance, this root is very largely used for masking the taste of bitter drugs, such as quinine and other nauseous remedies. Although a very ancient drug, it seems to have been entirely overlooked for a long time. This peculiar property which it possesses is due to the sweet principle, glycyrrhizin, which acts on the gustatory nerves, and deadens their sensibility.

Robiquet (in 1809) obtained from the licorice root, starch, asparagin, albumin, a resinous oily matter, to which the slight acrid taste of the root is due, and glycyrrhizin, a peculiar sweet principle, which can be obtained by precipitation from a strong decoction upon the addition of an acid or a solution of bitartrate of potassium. The same investigator also found it to contain malic acid. The starch in the root can very readily be seen by the use of a microscope or by testing a decoction with iodine, when the characteristic blue color is produced.

In 1875, Roussin found the sweet principle to be present in the root in combination with ammonia as glycyrrhizate of ammonium, which he obtained pure from the cold infusion by precipitating with sulphuric acid. It is then purified by washing with water, dissolving in strong alcohol, and adding ether, when a blackish mass is thrown down. The clear liquid is then carefully mixed with small quantities of alcoholic solution of ammonia. The precipitate is yellowish, very light, and by evaporating its aqueous solution, is obtained in brittle, translucent, shining scales.

*Paper read at the annual meeting of the Amer. Pharm. Assoc. in Cincinnati.

The "Pharmacographia" says: "When glycyrrhizin is prepared from a decoction of the root, by precipitation with a solution of cream of tartar, or basic acetate of lead, then washed with diluted alcohol, and dried, it is an amorphous, yellow powder, possessing a strong bittersweet taste, and an acid reaction. It forms with hot water a solution which gelatinizes on cooling, does not reduce alkaline tartrate of copper, is not fermentable, and does not rotate the plane of polarization.

In 1851, Gorup-Besanez found glyzyrrhizin prepared in a similar manner to that of Roussin to have the composition $C_{24}H_{36}O_9$, to be soluble in hot water, alcohol, and ether, and on boiling with dilute acids to be split into glucose, and a bitter resinous substance named glyzyrretin, which is insoluble in water, but dissolves in alcohol and alkalies. By fusing it with potassa, Weselsky and Benedikt (1876) obtained paraoxybenzoic acid, $C_7H_6O_3$.

The above embraces the principal literature bearing upon the pharmacy of the drug. You have, no doubt, noticed that the alkalies readily dissolve glycyrrhizin, the principal substance to be obtained in making the galenical preparations of the root. Pharmacists, therefore, should not lose sight of this important point, and formulate a good working menstruum accordingly.

I have found after several trials of mixtures of alcohol and water, or alcohol, glycerin, and water in various proportions, that the results obtained in the completed extracts were not altogether satisfactory. A 12-per-cent alcoholic menstruum will not keep the finished product. I have noticed fermentation to set in after standing two or three months during summer, which caused precipitation; the precipitate, upon examination, was found to be principally glycyrrhizin. But by the addition of the ammonia to the menstruum, very good results were obtained. Certainly a decided improvement over the old formula of the Pharmacopœia of 1870, which does not contain any alkali. I have found that the preparation contained a much larger amount of the sweet principle; besides, no precipitation of the finished product was observed to any extent six months after being manufactured. The sweetness of the extract being so much stronger, the slightly acrid taste of the root is scarcely perceptible, thus making it more desirable as a flavoring ingredient in cough remedies, and concealing the taste of bitter medicines, for which purpose it is frequently prescribed by physicians. The formula for the fluid extract of the Pharmacopœia of 1880 is very good, with the exception that too much water of ammonia is used. There is one and a half ounces in each pint, and in all my experience and observation I have found one ounce sufficient. At least, very excellent and satisfactory results were obtained, and this was only determined after repeated experiments were made with a view of finding out the smallest amount of ammonia it was necessary to use. I also recommend the addition of glycerin to the menstruum, as the finished product is much handsomer and continues to remain so. By the improved, formula which the writer herewith furnishes, if the material operated upon is good, and the process carefully managed in every particular, a perfectly reliable and stable fluid extract can be made.

EXTRACTUM GLYCYRRHIZÆ FLUIDUM.

(Fluid Extract of Licorice Root.)

Take of Licorice Root in moderately fine powder, 16 troy ounces; Glycerin, 3 fluidounces; Alcohol, Water, Water of Ammonia, sp. gr. 0.960, of each, a sufficient quantity.

Mix 5 fluidounces of alcohol, 3 fluidounces of glycerin, 7 fluidounces of water, and 1 fluidounce of water of ammonia. Moisten the powdered drug with the menstruum, pack in a cylindrical percolator, cover the surface, and pour on the remaining portion of the menstruum, and when percolation commences, close the orifice with a cork, then cover the percolator to prevent evaporation, and set it in a moderately warm place for two days, after which the cork is removed and diluted alcohol poured upon the top and percolation continued. The first 12 fluidounces which are obtained are reserved, and percolation continued until 12 fluidounces more have passed, which are carefully evaporated to 4 fluidounces, when the two portions are mixed. After standing two or three days, it is filtered through paper.

Ground Ointment Medicaments.

BY JOSEPH FEIL, PH.G., OF CLEVELAND, OHIO.

WHO, in the daily round of prescriptional duties, has not hoped, desired, and prayed for easier methods in making ointments?

We claim to be progressive, and yet we follow the same method of making unctuous preparations as were practised by Galen and, maybe, a thousand years before his time.

The innovation I propose has nothing startling about it, nor will it tend to increase expenses, in fact it should reduce them.

What we want is, ground ointment medicaments, so

that we can almost instantly mix them with our ointment bases, save time, and have much handsomer-looking preparations.

We know the main difficulty in making this class of Galenicals lies in getting the medicament in a very fine state of division. This is a laborious and time-taking operation, and time—at least with some pharmacists—is money; now what I propose is, let the pharmacist get a small paint mill and proceed as mentioned further on, or induce our ever-willing-to-accommodate-us friends, the ubiquitous manufacturing chemists, to put on the market a line of ground ointment medicaments such as zinc oxide, lead carbonate, yellow and red mercuric oxide, ammoniated mercury, etc., ground in benzoinated cotton-seed oil.

The value of this base for the purpose is, that less is required than if a more solid one is used, its practical tendency to rancidity or other form of decomposition is nil, and it requires only one-fifth the weight of the chemical to get it in proper condition for use; that is to say, for example, if it were desired to make five ounces of zinc oxide ointment, for the one ounce zinc oxide one and one-fifth ounces of the ground preparation would be required, and then sufficient of the required base to make five ounces.

These ground medicaments could be put on the market in collapsible tubes containing two or four ounces each, or half and one pound patent painters' cans; the cost of grinding would be small, and the saving to the pharmacist in time would be great. Besides, an ointment made from such ground chemical or drug would certainly be better and smoother than any the pharmacist could make from ordinary drugs used for this purpose as found in the open market.

Liquor Gutta-Perchæ. Solution of Gutta-Percha. Traumaticin.*

BY J. M. GOOD, ST. LOUIS.

QUERY XIV.—What is the best means of clarifying liquid gutta-percha? A better one than the present officinal one is desired.

The officinal process for this preparation, as is well known by all who have tried it, is entirely unsatisfactory, and hence the demand of the query for a better one.

The limited use which it has had is, to a great extent, responsible for the perpetuation of the process, through a number of decades which has given such an indifferent result. Yet, in opposition to this, it may be stated that an inferior article would necessarily find little favor.

A good article used as a simple, external coating possesses merits not fully appreciated, but more recently it has come to be frequently prescribed as an excipient for chrysarobin, salicylic acid, and other substances used in the treatment of skin diseases.

The sample which I here present, and which is clear even to brilliancy, was prepared by myself, by a process which is neither new nor startling.

It is to take of gutta-percha, select and cut into shreds, 4 parts, chloroform, 96 parts. Put the chloroform into a wide-mouthed bottle, add the gutta-percha, and agitate frequently until dissolved. Then filter.

The first criticism on the officinal formula is that the amount of gutta-percha ordered is too great; the solution is so thick that the carbonate of lead is deposited slowly and with difficulty. If, eventually, a product is obtained which has some degree of transparency, it is too thick for satisfactory use. To clarify the liquid so that it may be rendered transparent is the next desideratum. This step is simplified somewhat by the first modification of the formula.

Filtration has heretofore been considered impracticable, and for even a quite dilute solution we must still regard the ordinary filter but poorly adapted, but, fortunately, Thomas Stewart, of Philadelphia, with his "patent textile filtering paper," comes to our relief, and furnishes us with a filter which answers every requirement of the case. The apparatus for filtering must be closed and adapted for volatile liquids. That known as the "Mohr & Redwood" device, and described in the different works on pharmacy, is simple and convenient.

A quick and easy way to prepare this solution is to dissolve the dentists' white, purified gutta-percha in chloroform, but the objection to this is the cost of the purified article, it being quoted at about $1 an ounce, while a good article of gutta-percha may be purchased for $2 a pound. A good article of traumaticin may be purchased for $2.75 per pound. The actual cost of it, prepared as I have shown you, is less than 75 cents a pound. A sample in my possession, purchased from a reliable firm, left, upon evaporation, 4 per cent of pure gutta-percha.

This is apparently the same strength as what I have prepared. It is in reality about ½ per cent stronger. The filter which I used was counterpoised, and on weighing the dried deposit on the filter, the gutta-percha, although the best that could be obtained in the form of chips, was found to contain 10 per cent of impurities. If 5 per cent instead of 4 be employed, the solution could still be readily filtered, I think. Decimal proportions, where they can appropriately be employed, are the most acceptable, but the actual strength of the officinal solution can be left for future experiment.

* Paper read at the Annual Meeting of the Amer. Pharm. Assoc. at Cincinnati.

Agents for Making Hydro-alcoholic or Aqueous Solutions of Volatile Oils, etc.*

BY DR. CHAS. O. CURTMAN, ST. LOUIS.

FOR the purpose of obtaining officinal solutions in water of a variety of essential oils, camphor, etc., various processes have been devised so as to secure not only a full saturation, but at the same time a perfectly clear and limpid product. In case of the aromatic waters, distillation gives certainly a very good result, superior in many instances to the solutions of previously distilled oils, but it is on the one hand somewhat troublesome and expensive, while on the other hand it does not always avoid turbidity, arising from too great an abundance of the aromatic oil. To obtain, in a short time and at trifling expense, an aromatic water of full strength and thoroughly clear, it was formerly the practice to mix the oil with magnesia (so as to divide it into very small particles, and thereby render it more readily soluble), and after addition of the water to filter it. The product thus prepared is certainly quite clear and well saturated, but objectionable from the presence of magnesia in solution, which renders the aromatic water less suitable as a solvent for silver nitrate, etc. In the last pharmacopœia, cotton is directed as absorbent and distributor of the substances to be dissolved, and it yields excellent results, so far as clearness and saturation are concerned, but complaints have been made that slimy flakes of fungoid growths are more likely to occur in waters prepared by this method. To obviate such a deterioration, Dr. Hoffmann has proposed the use of finely powdered talcum, while others have used precipitated calcium phosphate, and others again the silicious material composed principally of fossil diatoms, and known under the name of *kieselguhr*, or diatom earth, erroneously called infusorial earth. At the request of Mr. J. M. Good, of this city, who kindly supplied me with specimens of materials from various sources, I made a series of experiments as to their relative value, not only for the preparation of medicated waters, but also for the clarification of various fruit juices and elixirs in which vegetable acids, ammonium citrate, etc., are among the ingredients. It soon became evident that calcium phosphate is not very suitable for the latter purpose, as quite a quantity is dissolved by the vegetable acids. Even aqua cinnamomi, if prepared with its aid, while of beautiful, clear appearance, left on evaporation and ignition upon platinum foil, a considerable permanent residue.

Different specimens of talcum, procured from various sources after washing with dilute hydrochloric acid, according to Dr. Hoffman's directions, were unexceptionable for the preparation of aromatic waters. When treated, however, with tartaric or citric acid or ammonium citrate, iron passed into solution. To remove this more completely than by simple washing, 100 parts of talcum were boiled for a short time with a mixture of 100 parts of dilute hydrochloric acid, U. S. P., and 400 parts of distilled water. The turbid mixture was allowed to settle, the liquid decanted, and the residue again boiled for a few minutes with a like quantity of dilute hydrochloric acid, of about one-half the strength of the foregoing. After standing and decanting the acid, water was added to the residue and thoroughly shaken up with it, and the decantation repeated several times until a specimen of the water poured off did no longer give the Prussian-blue reaction for iron with potassium ferrocyanide. The moist talcum was then thrown upon a filter, and washed out with distilled water until the removal of all the hydrochloric acid was indicated by a failure of the filtrate to produce a cloudiness with silver nitrate.

Talcum thus prepared forms a most efficient and unexceptionable material, not only for the preparation of aromatic waters, but also for the clarification of various acid materials entering into the composition of elixirs, etc. Not the least trace of permanent residue can be found after filtration through it in solutions of vegetable acids or ammonium citrate.

The next experiments were made with silicious earth from two sources, the "kieselguhr," from Germany, and "diatom earth," from Virginia. Both of these contained large quantities of iron, the Virginia specimen more than double that of the German. They were purified in the same manner as the talcum, but required much longer boiling before being freed from iron. After purification, they were used for the preparation of aromatic waters. They yielded excellent results so far as clarification is concerned, but did not appear to absorb quite so much oil, so that the same quantity of oil requires about 10 per cent more of kieselguhr than of talcum, while the Virginia specimen proved even somewhat less absorbent than the

* Paper read at the Annual Meeting of the Amer. Pharm. Assoc. at Cincinnati.

German. Treated with organic acids and ammonium citrate, they yielded nothing to them.

On comparing the different materials experimented with, it is evident that thoroughly purified talcum stands at the head of the list. Next comes German kieselguhr, which fully equals talcum in its excellent results, but requires to be employed in somewhat larger quantity. Nearly equal to this stands the Richmond diatomaceous material, while calcium phosphate is not eligible. In the short time allowed for observation, no slimy flakes of fungoid growth were developed in any of the specimens.

ST. LOUIS, MO., August, 1887.

Bismuth and Potassium Citrate.*

BY JOSEPH FEIL, PH.G., CLEVELAND, OHIO.

WHETHER soluble bismuth salts possess the therapeutic value of the insoluble salts or not, the fact is evident that such a soluble compound has been used for a sufficient length of time to prove at least by its continued and somewhat increased demand that it possesses some valuable and positive medicinal value.

The objections to the bismuth and ammonium citrate are its aptness to lose ammonia, and hence to be rendered somewhat insoluble, and the still greater one of requiring an excess of aqua ammoniæ to keep it in solution, and hence rendering medicinal substances requiring a neutral or acid solution, and usually combined with this remedy, inert, or throwing them out of solution altogether.

With the purpose of discovering some bismuth salt which shall be soluble in water, neutral to test paper, not precipitated by acid or alkali, and easy to be used with pepsin, pancreatin and alkaloids, I have instituted some two hundred experiments.

It would be soul-wearying to again go over the ground once traversed, although infinitely easier on paper than at the laboratory table, but it would also serve no purpose; the conclusion of the work is, however, I modestly may expect, of some value to chemistry and pharmacy.

I searched every available chemical work in two large libraries and I found no reference to such a bismuth salt as I desired to have. It was astonishing that recent standard chemical works, such as Roscoe and Schorlemmer and others, do not even mention bismuth and ammonium citrate.

After very many experimental failures, I finally found that bismuth citrate is soluble to a very appreciable extent in potassium citrate solution.

I can state that two parts bismuth citrate and five parts potassium citrate will make a clear solution with twenty parts water with the aid of a gentle heat. This solution will retain its clearness for several days, when a deposit of perhaps one-eighth of the mixed salts takes place, and the rest remains in solution definitely. When about one-third glycerin is used in place of so much water, only one-half the amount of deposit takes place, or one-sixteenth of the salts used. I have not yet definitely determined the nature of this precipitate. The solution shows, on testing, a considerable percentage of bismuth salt yet in solution, the deposit, however, shows a larger amount of bismuth salt than two-sevenths, the proportion used. The solution is not affected by the addition of ordinary acid, alkaline, or alkaloidal solutions.

The work required was so much greater than I anticipated that I could not complete my experiments.

The above salt was used in several cases by a Cleveland physician, and he found about the same action as from the pharmacopœial bismuth and ammonium citrate.

Calomel Administered Subcutaneously.

THE administration of calomel by subcutaneous injection, in the treatment of syphilis, has been reported upon favorably by Dr. Krecke, who states that he has found this method the most certain in its results next to inunction (*Münch. Med. Wochenschr.*, No. 6, p. 93.) The calomel is simply suspended in water containing an equal weight of sodium chloride, ten per cent of each being usually used. Care should be taken to shake the bottle before using the mixture, and after the syringe has been filled it should be held with the needle downwards until the injection has been made. From one to two grains of calomel are injected deep in the gluteal region every five or six days. The treatment is also recommended by Dr. Carl Hopp (*Med. Rec.*, July, p. 305), who states that dépôts of calomel are formed at the point of injection from which the perchloride is gradually formed and diffused through the system.—*Pharm. Journ.*

Colored pencils for writing upon the human skin are made in three colors, black, blue and brown, by Johann Frösheis, lead pencil manufacturer at Nuremberg. The object of these pencils is to serve for anatomical or clinical purposes, for instance, for marking the extent of the exudation in cases of pleurisy.

*Paper read at the Annual Meeting of the Amer. Pharm. Assoc. at Cincinnati.

Specimens from the National Formulary now in Course of Preparation.*

EMULSIO OLEI MORRHUÆ.

EMULSION OF COD-LIVER OIL.

I. *Irish Moss Emulsion of Cod-Liver Oil.*

Cod-Liver Oil	8 fluidounces.
Mucilage of Irish Moss	5 "
Syrup of Tolu	2 "
Flavoring	a sufficient quantity.
Water	enough to make 16 fluidounces.

Pour the Mucilage of Irish Moss into a suitable bottle, add the Cod-Liver Oil in divided portions, shaking well after each addition, and, when a perfect emulsion is formed, add the Syrup of Tolu, and Flavoring, and lastly, enough Water to make *sixteen* (16) *fluidounces*. Finally, shake the whole thoroughly together.

This emulsion may also be prepared by mixing the Mucilage of Irish Moss with the Oil and other ingredients in a mortar, or, when larger quantities are to be prepared, it may be mixed by some mechanical contrivance.

When Emulsion of Cod-Liver Oil is to be kept for some time, its deterioration may be retarded by the addition of *one* (1) *fluidounce* of Alcohol in place of the same quantity of Water, after the Oil has been emulsified.

Emulsion of Cod-Liver Oil may also be prepared by any other method capable of emulsifying the oil, the following being given as examples:

II. *Acacia Emulsion of Cod-Liver Oil.*

Cod-Liver Oil	8 fluidounces.
Acacia, in fine powder	2 troy ounces.
Syrup of Tolu	2 fluidounces.
Flavoring	a sufficient quantity.
Water	enough to make 16 fluidounces.

Triturate the Acacia with *three and one-half* (3½) *fluidounces* of Water to a smooth paste; then add the Cod-Liver Oil in divided portions, triturating well until the last added portion is thoroughly emulsified. Next add the Syrup of Tolu, and the Flavoring, and lastly, enough Water to make *sixteen* (16) *fluidounces*. Finally, mix the whole thoroughly together.

III. *Glyconin Emulsion of Cod-Liver Oil.*

Cod-Liver Oil	8 fluidounces.
Glyconin	2½ "
Syrup of Tolu	2 "
Flavoring	a sufficient quantity,
Water	enough to make 16 fluidounces.

Triturate the Glyconin in a mortar with the Oil, added in small portions at a time, and thoroughly incorporate each portion before adding the next. Then, continuing the trituration, gradually add the Syrup of Tolu, and Flavoring. Finally, add enough Water to make *sixteen* (16) *fluidounces*, and mix the whole thoroughly together.

IV. *Quillaja Emulsion of Cod-Liver Oil.*

Cod-Liver Oil	8 fluidounces.
Tincture of Quillaja	1 fluidounce.
Syrup of Tolu	2 fluidounces.
Flavoring	a sufficient quantity.
Water	enough to make 16 fluidounces.

Pour the Tincture into a suitable bottle, then add the Cod-Liver Oil in portions of about *two* (2) *fluidounces* each, and shake after each addition until a perfect emulsion is made. Next add the Syrup of Tolu and the Flavoring, and lastly, enough Water to make *sixteen* (16) *fluidounces*. Finally, mix the whole thoroughly together.

An 85-per-cent Emulsion of Cod-Liver Oil may be prepared by mixing in the manner just described:

Cod-Liver Oil	8½ fluidounces.
Tincture of Quillaja	1 fluidounce.
Syrup of Tolu	½ "
Flavoring	a sufficient quantity.

Note.—Emulsion of Cod-Liver Oil made with Quillaja should not be dispensed without the direction or consent of the prescriber.

Flavoring.—Since no single or compound aromatic can be devised which would be acceptable under all circumstances, the selection of the most suitable Flavoring must be left to the prescriber or dispenser. Among those which are found to be most generally serviceable are the following, the quantities given below being intended for *one* (1) *pint* of finished emulsion, though in some cases a smaller or a larger quantity in the same proportions, may be preferable:

*From the report of the Committee on National Formulary. See editorial on page 198.

	MINIMS.		MINIMS.
1. Oil of Gaultheria.....	30	5. Oil of Gaultheria.....	10
		Oil of Sassafras.....	10
2. Oil of Gaultheria.....	15	Oil of Bitter Almond.	2
Oil of Sassafras.....	15		
		6. *Oil of Gaultheria....	20
3. Aromatic Spirit (*N.F.*)	120	Oil of Bitter Almond.	20
4. Oil of Gaultheria.....	15	7. *Oil of Neroli.....	12
Oil of Bitter Almond.	2	Oil of Bitter Almond.	12
Oil of Coriander.....	2	Oil of Cloves.	2

Elixir Ferri Phosphatis, Quininæ et Strychninæ.

ELIXIR OF PHOSPHATE OF IRON, QUININE, AND STRYCHNINE.

Phosphate of Iron (U. S. Ph., 1880)....	256 grains.
Citrate of Potassium.....	32 "
Hydrochlorate of Quinine.....	128 "
Sulphate of Strychnine.....	1¼
Alcohol	1 fluidounce.
Water.....	360 minims.
Aromatic Elixir.....enough to make	16 fluidounces.

Dissolve the Phosphate of Iron and Citrate of Potassium in the Water, if necessary with the aid of heat. Add the alkaloidal salts to about *ten* (10) *fluidounces* of Aromatic Elixir contained in a bottle; next add the Alcohol, the solution of Phosphate of Iron previously prepared, and, having shaken the mixture, add enough Aromatic Elixir to make *sixteen* (16) *fluidounces*. Finally, filter.

Each fluidrachm contains 2 grains of Phosphate of Iron, 1 grain of Hydrochlorate of Quinine, and $\frac{1}{100}$ *grain of Sulphate of Strychnine.*

Syrupus Phosphatum Compositus.

COMPOUND SYRUP OF THE PHOSPHATES.

(*Chemical Food.*)

Phosphate of Iron (U. S. Ph. 1880).....	128 grains.
Precipitated Phosphate of Calcium....	256 "
Bicarbonate of Potassium.....	32 "
Bicarbonate of Sodium.....	32 "
Phosphate of Ammonium.....	128 "
Citric Acid.....	1 troy ounce.
Glycerin	1 fluidounce.
Phosphoric Acid (50%).....	2 fluidounces.
Orange Flower Water.....	2 "
Tincture of Cudbear.....	120 minims.
Sugar.....	8 troy ounces.
Water .....enough to make	16 fluidounces.

Triturate the Precipitated Phosphate of Calcium with the Bicarbonate of Potassium and Sodium, the Citric Acid, Glycerin, and Orange Flower Water, and gradually add the Phosphoric Acid, stirring until solution has been effected. Dissolve the Phosphate of Iron and the Phosphate of Ammonium in *four* (4) *fluidounces* of hot Water, cool, and add the solution to that previously prepared. Filter the whole through a pellet of absorbent cotton placed in the neck of a funnel, and receive the filtrate in a graduated bottle containing the Sugar. Agitate until the latter is dissolved, then add Tincture of Cudbear, and lastly, enough Water to make *sixteen* (16) *fluidounces*.

Pepsinum.

PEPSIN.

The digestive principle of the gastric juice, obtained from the mucous membrane of the stomach of the hog, prepared in a dried form, and undiluted with foreign substances. In its commercial from, it is usually accompanied by varying proportions of soluble albuminoids or peptones, which, themselves, have a share in its digestive action.†

Assay of Pepsin. I. *Preliminary Assay.*—Prepare an Acidulated Water by mixing 1 liter of Distilled Water with 5 Gm. of Hydrochloric Acid. Mix 0.1 Gm. of the dry and undiluted Pepsin with 0.9 Gm. of Sugar of Milk by thorough trituration in a wedgewood mortar. Weigh of this mixture four portions of 0.1 Gm. (*A*), 0.15 Gm. (*B*), 0.2 Gm. (*C*), 0.4 Gm. (*D*), respectively, place each portion into a wide-mouthed flask or bottle of the capacity of about 100 C.c., together with 40 C.c. of the Acidulated Water, previously warmed, and set the flasks in a water-bath the temperature of which is maintained constantly at 51.6° C. (125° F.). After twenty minutes, add to the contents of each flask 5 Gm. of hard-boiled egg albumen, prepared by boiling fresh eggs for fifteen minutes, then separating the whites and passing this through a sieve having 30 meshes to the linear inch. Each portion of 5 Gm. of egg albumen is to be put into a small warmed mortar, triturated with a portion of the fluid from one of the flasks, the mixture then transferred to the latter, and the mortar rinsed with 10 C.c. of warmed acidulated water, which is added to the contents of the flask. Keep the flasks in the water-bath for thirty minutes, shaking well at intervals of five minutes, and at the end of that time note the condition of the egg albumen in the several flasks. If the pepsin is of good quality, not more than a few undissolved flakes should remain in any but the first flask (*A*). If more than this remains in the fourth flask (*D*), the pepsin should be rejected, as being below the requisite standard.

II. *Actual Assay.* Having thus ascertained the approximate digestive power of the pepsin, and having found this to be of satisfactory strength, make at least two assays in precisely the same manner as just described, but using such a proportion of egg albumen that about one-fourth of it will remain undissolved at the close of the experiment. Then throw the contents of the flask upon a muslin strainer, drain, transfer the residue to a tared capsule or watch-glass, and dry it at 105° C. (221° F.) to a constant weight. Multiply the weight of the dry residue by 7.5, to find the quantity of moist egg albumen to which it corresponds, and deduct the product from 5 Gm., to ascertain the quantity dissolved by the pepsin.

Pepsinum Saccharatum.

SACCHARATED PEPSIN.

Pepsin, dry and undiluted....a sufficient quantity.	
Sugar of Milk.....enough to make	100 parts.

Triturate as many parts of the Pepsin as may be found to be capable of dissolving *five thousand* (5,000) *parts* of egg albumen, by the process of assay given under *Pepsinum*, with enough Sugar of Milk to make *one hundred* (100) *parts*.

Caffeinæ Sodio-Benzoas.

SODIO-BENZOATE OF CAFFEINE.

Caffeine.....	....50 parts.
Benzoate of Sodium.....	.50 "
Alcohol.....	.a sufficient quantity.

Triturate the Caffeine with the Benzoate of Sodium and a sufficient quantity of Alcohol to make a smooth paste, and dry this by exposure in a moderately warm place.

The product contains 50 per cent of caffeine, and is soluble in about two parts of water.

Infusum Gentianæ Compositum Fortius.

STRONGER COMPOUND INFUSION OF GENTIAN.

Gentian.....	2 troy ounces.
Coriander.....	½ troy ounce.
Bitter Orange Peel.....	½ " "
Diluted Alcohol.....enough to make	16 fluidounces.

Reduce the drugs to a moderately fine (No. 50) powder, moisten it with Diluted Alcohol, pack it in a percolator, and percolate with Diluted Alcohol, until *sixteen* (16) *fluidounces* are obtained.

Note.—When *Infusum Gentianæ Compositum* is prescribed, mix 1 volume of this preparation with 3 volumes of water.

Tinctura Ferri Citro-chloridi.

TINCTURE OF CITRO-CHLORIDE OF IRON.

(*Tasteless Tincture of Chloride of Iron. Tasteless Tincture of Iron.*)

Solution of Chloride of Iron (U. S. Ph. 1880)..	4 fluidounces.
Citrate of Potassium.....	7 troy ounces.
Alcohol.....	3 fluidounces.
Water.....enough to make	16 "

Mix the Solution of Chloride of Iron with *four* (4) *fluidounces* of Water, and dissolve in this the Citrate of Potassium with the aid of a gentle heat. Then add the Alcohol, and when the solution has become cold, make up the volume with water to *sixteen* (16) *fluidounces*. Set the product aside in a cold place for a few days, if convenient, so that the excess of saline matter may separate. Then filter, and pass enough cold Water through the filter to restore the original volume.

Each fluidrachm contains an amount of Iron equivalent to about 7½ grains of dry Chloride of Iron (ferric).

Note.—This preparation is practically identical in the strength of iron, but not in the quantity of alcohol, with the officinal *Tinctura Ferri Chloridi*.

Syrupus Acidi Hydriodici Decolor.

COLORLESS SYRUP OF HYDRIODIC ACID.

Iodide of Potassium.....	123 grains.
Hypophosphite of Potassium.....	3 "
Tartaric Acid.....	.....112 "
Water.....	½ fluidounce.
Diluted Alcohol.....	1 "
Syrup.....enough to make	16 fluidounces.

Dissolve the Iodide and Hypophosphite of Potassium in *one-half* (½) *fluidounce* of Water, and the Tartaric Acid in *one-half* (½) *fluidounce* of Diluted Alcohol. Mix the two solutions in a vial, cork and shake it well, then place it in

* Nos. 6 and 7 have been added since the Report was offered to the Association.

† This definition has been criticised as admitting pepsins of unknown mode of manufacture, and as practically rejecting the officinal. The following has been suggested as avoiding these difficulties: "The digestive, etc., etc., . . . prepared in a dry form, and capable of dissolving not less than 500 times its weight of hard-boiled egg albumen, under the conditions prescribed for the process of assay below given." If this strength is adopted, then the assay process will have to be altered so as to make the flask *D* show that 1 part of the pepsin will *at least* digest 500 parts of albumen. That is, the several flasks will have to receive the following quantities of the pepsin, previously mixed with 9 parts of milk-sugar, *A*, 0.025; *B*, 0.03; *C*, 0.05; *D*, 0.1 Gm. These quantities being probably too small, multiples of them may be taken, and proportionately more albumen. [Ed. Am. Drug.]

ice-water for about ten minutes; again shake thoroughly, and then filter through a small white filter contained in a funnel, the stem of which dips below the surface of about *fourteen* (14) *fluidounces* of Syrup contained in a bottle. When the liquid has run through, wash the vial and filter with *one-half* (½) *fluidounce* of Diluted Alcohol, added in several portions. Then add enough Syrup to make *sixteen* (16) *fluidounces*. Keep the product in well-stoppered bottles.

Note.—This preparation is of about the same strength, volume for volume, as the officinal *Syrupus Acidi Hydriodici.**

Liquor Cupri Alkalinus.

ALKALINE SOLUTION OF COPPER.

(Fehling's Solution.)

1. *The Copper Solution.*

Sulphate of Copper, pure	34.639 Gm.	505 grains.
Distilled Water...enough to make	500 C.c.	16 fluidounces

Dissolve the Sulphate of Copper which, before being weighed, should have been reduced to powder and pressed between blotting-paper, in a sufficient quantity of Distilled Water to produce the volume required by the corresponding formula above given.

II. *The Alkaline Solution.*

Tartrate of Potassium and Sodium..	173 Gm.	2,520 grains.
Soda (U. S. Ph. 1880)....	60 "	2 troy ounces.
Distilled Water....enough to make	500 C.c.	16 fluidounces.

Dissolve the Tartrate of Potassium and Sodium and the Soda in a sufficient quantity of Distilled Water to produce the volume required by the corresponding formula above given. Set the mixture aside until the suspended impurities have been deposited; then remove the clear solution with a siphon.

Keep both solutions, separately, in small well-stoppered vials, in a cool and dark place. For use, mix exactly equal volumes of both solutions, by pouring the copper solution into the alkaline solution.

On diluting a small quantity of the mixed reagent with about three volumes of Distilled Water, and heating the liquid in a test-tube to boiling, it should remain entirely clear, without any trace of discoloration or precipitate.

Of the metric solution, 10 C.c. correspond to 0.05 Gm. of glucose. Of the other solution, 210 minims correspond to 1 grain of glucose.

Emplastrum Picis Liquidæ Compositum.

COMPOUND TAR PLASTER.

Tar.....	20 parts.
Resin.....	25 "
Podophyllum, in No. 60 powder.....	5 "
Phytolacca, in No. 60 powder.....	5 "
Sanguinaria, in No. 60 powder	5 "

Melt the Resin and Tar together, then stir in the mixed powders, and as it cools, mould the mass into rolls, or pour it into boxes.

The Natural History of the Sponge.

In connection with a recent paper on American sponges, by Mr. E. M. Holmes, the Curator of the Museum of the Pharmaceutical Society, published in the *Pharm. Jour.* (June 4th), the author gives a brief account of the natural history and chemistry of the sponge as follows:

Commercial sponges are confined, so far as at present known, to the Mediterranean and Red seas, and to the waters of the Caribbean islands, Bahaman archipelago, and the southwest and west coasts of Florida. Australia, however, affords a new form,† and others have been stated to be found on the Atlantic coast of Brazil. Those of Bermuda, according to Mr. Hyatt, appear to be much coarser than those of Key West, and are just about intermediate between these and those of Australia.

The species show an extreme susceptibility to vary under any change in external conditions, the greatest number of forms and species being produced in tropical or subtropical seas, and occurring most abundantly in archipelagos, or off seas bordered by a number of islands or long reefs, where the floating food of the sponges becomes concentrated in channels between the islands; a continuous current of aërated water and a plentiful supply of food being essential to sponge growth. Temperature also affects their geographical distribution, which appears to be limited by a minimum temperature of 55° F.; sponges flourishing best where the average aërial temperature in winter is between 63° and 70° F. The nature of the bottom on which they are found also modifies their growth and properties. Mr. Saville Kent points out that no sponges of the finest quality have yet been found in seas productive of reef corals. Sandy or clayey bottoms and river sediment are also prejudicial, or any situation wherever there is much gritty matter suspended in the water; the clearer the water the finer the fibre. The depth at which the sponges grow affects greatly the fineness of the threads and the strength and elasticity of the sponge. The best Turkey cup sponges are fished at a depth of not less than 8 to 30 fathoms, some being obtained from a depth of even 40 fathoms. In the American waters, sponges are rarely fished below a depth of 5 fathoms. In Mr. Saville Kent's opinion, it is possible that sponges equal to the finest Turkish varieties may yet be found in greater depths in the Bahamas.

The variation in the form of the sponge depends in some degree on the position and ramification of the oscules, and upon the character of the base to which they are attached, and the force of the current to which they are exposed, and, possibly, also on the depth at which they grow. The cup-shaped sponges are found at the greatest depth. When growing on a sandy or muddy bottom they sometimes become loosened, and are known as "rollers," and are recognized commercially by their rounded bases and the dark tint of the lower half of the sponge.

The reproduction of the sponge takes place from the egg-like bodies which are found about midsummer in the interior of sponges, either aggregated in a sac or scattered through the tissue. Each egg contains, inclosed in a thin membrane, a substance corresponding to the yolk and another like the white of an ordinary egg. The egg increases in size by segmentation of its contents, becomes oval in shape, forms a covering of delicate cilia, and then swims about, ultimately settling down, and developing cells at the lower end, which become fixed to the rock, when the upper end develops in the form of a nipple, and the cilia fall off. The lower end gradually spreads over the rock, the nipple becomes depressed and ultimately perforated; this perforation forming the first oscule or excurrent aperture, smaller incurrent openings or pores being formed around it. The development of amœbiform particles, and the deposit of fibre leads to the multiplication of oscules and pores, or, in other words, to a colony of individuals resembling the first, but connected intimately with each other. The fibres which are formed around the oscule in a more or less vertical direction are called the primary fibres, and those which connect the fibres together, and which appear to originate from the primary fibres by a process of budding, are known as the secondary fibres.

In the living sponge, the primary fibres are found to shade off like the mouth of a trumpet into the gelatinous membrane which forms the outer surface of the sponge. The fibre itself consists of concentric layers made up of fine fibrillæ, These may often be observed at the broken end of the fibres under the microscope. In some localities the dermal or exterior membrane of the sponge is loaded with foreign matter, which by the growth of the sponge becomes drawn into the trumpet-shaped end of the fibres, and ultimately imbedded in their substance.* Much of the brittleness and coarseness of fibre of inferior sponges is due to this cause, and in some degree the dark color also, although this is also due to too cold a temperature and an unfavorable situation, as in shallow water. The reason that the secondary fibres are not usually gritty is evident from their not coming in direct contact with the external membrane, so that foreign matter cannot readily enter their structure.

The fibre or keratose of which the sponge skeleton is formed contains as a principal ingredient a substance named spongin, resembling the fibroin of silk in its composition, but differing from it in not yielding tyrosin when heated with sulphuric acid, but only glucosin and leucin.† It is insoluble in alcohol, ether, and ammonia, but is dissolved slowly by strong alkalies, and is re-precipitated by dilute acids, but only concentrated acids attack it.

Estimation of Phosphoric Acid.

Prof. Laubenheimer recommends the following modification of the well-known method of precipitating phosphoric acid by means of the analytical magnesia mixture, when it is required to estimate phosphoric acid in iron preparations.

Mix the solution of the iron preparation (for instance, phosphate of iron) with a 50-per-cent solution of citric acid [enough of this should be used to combine with the whole of the iron present, and to leave an excess]; then add a large excess of concentrated water of ammonia, and afterwards test solution of magnesium (see U. S. Ph., p. 392). Stir well until a precipitate begins to appear. The precipitation will be completed within one hour.—After *Chem. Zeit.*

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* The appellation "decolor" (colorless) has been put into the title partly because the syrup, when made by this formula, is practically colorless and remains so for a long time, but chiefly to have some means of distinguishing it from the officinal preparation.—Ed. Am. Druggist.

† It has been suggested that the coast of Queensland, inside the great boundary reef, must be exceedingly favorable for the growth of sponges.

* Hyatt, "Revision of the North American Poriferae," part ii., p. 488.

† Stadeler, *Am. Chem. Pharm.*, cxi., 12.

Iodoform Emulsion with Glycerin.

When iodoform is required to be suspended in glycerin, as it is often demanded in surgical practice, the iodoform, owing to its high specific gravity, rapidly settles to the bottom. This may be remedied, to a certain extent, by first triturating the iodoform with a mixture of equal parts of glycerin and water, and afterwards to incorporate with this the glycerin. The latter will keep suspended with the resulting mixture or emulsion for a sufficiently long time to permit its being poured out without alteration of strength by precipitation.

Linimentum Ammoniæ.

Prof. Remington, in a paper read before the Pennsylvania Pharm. Assoc., stated that ammonia liniment, when made by the formula of the U. S. Ph., which directs cotton-seed oil, will separate into two layers, as the cotton-seed oil is not saponified by mere agitation with ammonia. The addition of a little alcohol retards or lessens the separation, but does not entirely prevent it. As the commercial olive oil which was formerly directed to be used consists almost entirely of cotton-seed oil, it is useless to go back to the old formula. An unobjectionable preparation, however, is obtained by mixing

Lard Oil	70 parts.
Water of Ammonia	30 parts.

Carmine Color.

Mr. Joseph W. England read a paper before the Pennsylvania Pharm. Association, on the above subject, in which he pointed out the unsatisfactory results obtained when carmine solution prepared by the ordinary methods is added to alkaline or acid liquids. He recommended the following as far superior:

Carmine, No. 40	240 gr.
Water of Ammonia	3 fl. oz.
Glycerin	3 fl. oz.
Water	enough to make 8 fl. oz.

Rub the carmine to powder in a mortar, add first enough water of ammonia to make a paste, and gradually the remainder so that the carmine may dissolve. Next add the glycerin, and warm the whole in an evaporating dish until the excess of ammonia has evaporated; finally add enough water to make 8 fl. oz.

The color of this solution is ruby red, and not darkened by ammonia.

Boric Acid as an Antiseptic.

In reply to a query of the New York State Pharm. Association, regarding the alleged development of "microbes" or "germs" in a saturated aqueous solution of boric acid made with distilled water, Dr. R. G. Eccles, of Brooklyn, reported that in a series of test-liquids prepared for the purpose, which were examined from time to time, he has failed to find any microbes which could have developed therein. A recent saturated solution of boric acid, purposely infected with the "fungoid growth" from a solution of sulphate of strychnine, did not develop any more of it, but the boric acid was unable to kill it entirely. A saturated or 4-per-cent solution of boric acid has been found, in general, to render the lower organisms inert or inactive, though it has been shown that they are not absolutely destroyed. The chief effect probably is to render them incapable of multiplication. Wounds treated with boric acid exhibit healthy granulations, without any signs of putrefaction, but the pus may contain many micrococci. Boric acid, therefore, is an antiseptic, but neither a disinfectant nor a germicide.

Extract of Vanilla.

Mr. Clay W. Holmes reports, in a paper read before the New York State Pharm. Association, that he finds from a series of carefully conducted experiments, that in making extract of vanilla, the most satisfactory product is obtained by employing the pulp of vanilla beans (deprived of the rind) and a menstruum consisting of 3 parts of deodorized alcohol and 1 part of water. The extract may be obtained by maceration. The author believes that while the rind contributes much to the "body" of the extract, the pulp contains most of the flavor.

[Note.—In our experience, a very superior extract of vanilla may be obtained by digesting vanilla beans, previously reduced to a moderately coarse powder, with the aid of twice their weight of sugar, in an iron cylinder or strong can, capable of standing considerable pressure, with diluted alcohol, at a temperature of at least 176° F. If the can or cylinder will stand it—and this fact should be carefully ascertained beforehand—it is best to immerse the can into a boiler or kettle in which water is kept at a boiling temperature. The digestion should be continued for at least 24 hours, and the longer it can be continued afterwards the better for the result. A balsam of Peru can may serve for this purpose, but it must be tested for its resistance to pressure.—Ed. Am. Dr.]

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EDITORIAL.

The notable event in pharmaceutical circles during September was the meeting of the "A. P. A." at Cincinnati. We devote the greater portion of this number to a report of the proceedings and to the text of many of the papers. Preceding the meeting, some of our cotemporaries were greatly excited over the disclosures of bad management, if not of absolute peculation or fraud, which they predicted, but the reports which we have received thus far make it appear that the meetings of the Association were never more harmonious, and its finances never so flourishing as at present.

In August, 1885, we made the following suggestion relative to the reorganization of the proceedings of the Association:

"The present state of the affairs of the N. R. D. A. should serve to point out to the American Pharmaceutical Association its opportunity for advancing the interests of pharmacy generally. Had there existed in the composition of the more scientific body some provision for discussion and action upon matters that are purely questions of trade policy, the former association would, probably, never have come into existence. There are now many reasons why it may be desirable to provide for the consideration of such topics as they may from time to time be presented, even if it involves the addition of another day to the session, or greater attention to economy of time by condensing certain reports into abstracts to be presented at the meeting, while the detailed reports may be postponed for official publication.

"There is no good reason why pharmacists should have separate organizations for considering trade interests independently of other matters of a more professional nature, and the truth of this has been sufficiently demonstrated during the past two years by the appointment of nearly the same persons as representatives in the A. P. A. and N. R. D. A., and the coincidence of time and place of meeting for both bodies."

A perusal of the report of the meeting this year shows that our suggestion has been adopted, with the additional improvement of a division of the business proceedings into sections, each electing its chairman *pro tem.* This arrangement will certainly give the greatest flexibility to the organization, and enable two or more sections to be in session at the same time if the occasion demands.

It will also relieve the president and secretary of the Association of some portion of their labors, and develop the talent for directing the business of the Association in a larger proportion of its members.

THE change in the method of acquiring new members promises a very great increase in their numbers. A direct invitation on the part of the Association would appear to demand but little personal solicitation to render it effective, and we shall be greatly disappointed if the list of active members is not doubled at the next meeting.

AMONG the many occasions for congratulation attending the meeting at Cincinnati, one of the chief is the choice of Prof. J. U. Lloyd to the presidency. The Association could not have a better officer to organize its business under the new regime. When President Lloyd has worked out the details, his successor will find but little left to be accomplished in that direction.

Selections from the National Formulary.

AT the last meeting of the American Pharm. Association, the National Formulary Committee submitted their report, announcing the completion of their work in all its important details, and submitted some specimens of formulæ, to show the condition in which they would be printed unless some better substitute would be offered previous to going to press.

Among these specimens there are several which tried the patience of the Committee in a severe manner. It was, for instance, exceedingly difficult to come to a satisfactory decision as to the *kinds* of emulsions to be introduced, some advocating only *one* (and frequently differing in their choice of this *one* from each other). The Committee finally concluded to adopt the process which is least likely to fail in the hands of even the less experienced, as the principal one, but to give also formulas for others.

Regarding the former bugbear of elegant pharmacy, viz., the elixir of the phosphate of iron, quinine, and strychnine, the formula here offered is believed to be the very best that can be devised. It is exceedingly simple, and not liable to failure.

The formula of the compound syrup of phosphates has also been greatly improved by the addition of phosphate of ammonium, the suggestion of which is due to Mr. Rouillion, of Brooklyn. The process will be found easy and satisfactory.

ATTENTION is called to the fact that the Committee on National Formulary will be glad to receive criticisms or proposed improvements upon the formulæ presented in their report (see page 194), if these are sent to them previous to the 15th day of October. Communications may be directed to any member of the Committee, or to the Chairman of the Formulary Committee, care of College of Pharmacy, 209–211 East 23d street, New York.

Harmful Effects of Kerosene Stoves.—Dr. D. F. Lincoln, in a letter to the *Boston Medical and Surgical Journal*, narrates a personal experience in Savannah with a kerosene stove. In a room containing 1,100 cubic feet of air space, he introduced a kerosene stove for heating purposes, being able to raise the temperature by its means eighteen degrees. Although there was some odor, nevertheless he did not experience any personal discomfort. One evening he noticed that the reading lamp was dim, the flame having shrunk to half its size. When he carried it into the entry, it burned brightly. He subsequently tested the air with Walpert's air-testing apparatus, and found the amount of carbonic acid had reached sixty-seven parts per thousand, the normal amount being three or four parts. Each of the two burners in the stove was four inches in length, and generated as much carbonic acid as eight or ten common lamps. In a well-built house with tight doors the effect might be doubled.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 2,017.—**Rubber Plasters** (Ohio).

The last Committee of Revision of the U. S. Pharm., among other matters, considered the advisability of introducing a rubber plaster, or at least a basis for one, into the pharmacopœia, but it soon became evident that no practical formula could be devised for working on the small scale. In fact, a homogeneous and handsome plaster having a rubber base cannot be made without the use of heavy machinery. At the last meeting of the Pennsylvania Pharm. Assoc., Dr. J. J. Edmondson read a paper on the subject, in which he stated that the mere addition of solutions of caoutchouc to ordinary plaster masses does not render the latter more adhesive. But a good base may be made by mixing prepared caoutchouc 2 parts, with 1 part each of Burgundy pitch and olibanum. The prepared caoutchouc is obtained by soaking the crude commercial rubber in hot water, crushing it between corrugated rollers, washing with water, drying, and then softening it by passing it between smooth rollers, when the other ingredients may be incorporated with it. The basis thus prepared can be further mixed, by means of heavy rollers, with resins, extracts, etc., as desired, and the mass may then be spread, but requires special machinery for this.

No. 2,018.—**Oleoresin of Male Fern** (E. O. D.).

"What can I do with the sediment which collects at the bottom of bottles containing 'oil of male fern.' I have several original bottles in stock which persist in depositing this sediment after standing for some time. Can I not utilize it after the liquid portion has been poured off?"

You would commit a serious error, if you were to pour off and dispense the clear liquid portion of the "oil," or, more correctly, oleoresin of male fern, since the principal tænicidal constituent, viz., the filicic acid, has to a large extent separated from it, and crystallized out. It is the *sediment* in this case which represents the most valuable and active portion of the medicament. When male fern root is extracted with ether, a clear ethereal solution results, from which the filicic acid would not separate, were it not that the solution is afterwards evaporated and deprived of ether.

Previous to the appearance of the last U. S. Pharm., sufficient attention had not been drawn to this fact, and many pharmacists dispensed the clear portion of the oleoresin, rejecting the sediment. The last pharmacopœia, however (see under *Oleoresina Aspidii*), states:

"Oleoresin of Aspidium usually deposits, on standing, a granular-crystalline precipitate. This should be thoroughly mixed with the liquid portion before use."

The German Pharm. had omitted to give such directions, but the Pharmacopœia Committee of the German Pharm. Association has recently recommended the addition of such a passage.

No. 2,019.—**Antipyrine, Benzoic Acid, and Camphor.**

Our attention has been drawn to a peculiar phenomenon appearing when antipyrine, benzoic acid, and camphor are triturated together. The result is a *liquid*. Our informant told us that this did not occur when any one of the three ingredients was absent. We have, however, ascertained, by a simple experiment, that the camphor is not at all necessary to produce the reaction. When antipyrine and benzoic acid are triturated together in equivalent proportions (188 parts of antipyrine to 122 parts of benzoic acid), a liquid mass results very readily. When the relative quantities vary from those just stated, the mass turns out more or less liquid in proportion to the closeness with which the above figures are approached.

The resulting liquid contains or constitutes a benzoate of antipyrine, which is moderately soluble in water, and readily soluble in alcohol and ether.

When camphor and antipyrine, or camphor and benzoic acid are triturated together, no liquefaction occurs.

On triturating the three substances together, the only thing noticeable is this, that the liquefaction appears to occur a little more speedily. The probable reason is, that the liquid compound of benzoic acid and antipyrine has a rapid solvent action upon the camphor, and the increase in the bulk of liquid mass thereby produced facilitates the combination and solution of the remainder.

There is no evidence that camphor enters here into a combination similar to that which it forms with chloral, thymol, and other substances.

No. 2,020.—**Photoxylin** (E. S.).

Photoxylin is the name of a peculiar kind of gun-cotton, first prepared in Russia, according to information in our possession. It is prepared, as we have been told, from a very superior kind of wood-pulp, and furnishes a collo-

dion of very superior cohesive power. This property has been recognized in European surgical practice, inasmuch as surgical collodion prepared from photoxylin is preferred by several of the leading continental surgeons.

Some time ago, we endeavored to have some photoxylin imported for experimental purposes, but we found it impossible to procure it, as the shipping laws prevent its being carried on board of passenger vessels. We have since then ascertained that the article is identical with "Mann's Collodiumwolle" (or Mann's gun-cotton), which is sold by the photographic supply houses. If you apply to the latter, for instance to Anthony & Co., or the Scovill Manufacturing Co. of New York, you will be able to obtain the article.

No. 2,021.—**Preparation of Peroxide of Hydrogen on the large Scale** (W. K. N.).

Which particular process is used by the different makers of peroxide of hydrogen is not known to us. But it is evident that the largest manufacturers of this article, who turn out many thousand pounds a week, cannot employ the usual methods quoted in chemical text-books. On glancing over the literature of the subject, we find that Duprey's process (*Journ. f. prakt. Chem.*, 88, 440) appears to have the best chance of being employed on a large scale, at least among those which have been published. The process is as follows:

A rapid stream of carbonic acid gas is conducted through cold water, and to it are gradually added small portions of peroxide of barium reduced to an impalpable powder. According to Otto, it is preferable to use the hydrated peroxide of barium, which is obtained as follows: Finely powdered peroxide (dioxide) of barium, or the commercial so-called hydrated peroxide, is added to dilute hydrochloric acid, until the latter is nearly saturated. The solution is filtered and cooled, and then mixed with just enough solution of baryta to precipitate the foreign oxides and silica, and to produce a small precipitate of hydrated peroxide of barium. It is then again filtered, and by addition of concentrated solution of baryta, the hydrated peroxide of barium precipitated in a crystalline state. This may be preserved in a moist condition for a long time without spoiling, provided it is kept in air-tight vessels.

The products of the reaction are insoluble carbonate of barium and a solution of hydrogen peroxide. When a considerable amount of the former has been produced, it is allowed to deposit, the clear solution removed, and the process continued as before. The liquid must be kept cold, towards the end, by the application of ice, and care must be taken that there is always an excess of carbonic acid gas, which should keep the precipitate as it forms in suspension and prevent it from settling to the bottom. The small amount of barium which remains finally in solution as bicarbonate may be precipitated by the addition of a few drops of dilute sulphuric acid. A small excess of the latter is an advantage, as it will cause the product to keep better.

The advantage of this method is that it does not require any filtration, and that it furnishes a perfectly pure product if the hydrated peroxide of barium has been used. A vital condition of success is to add the peroxide in small quantities at a time, and if it is in a dry condition, to have it in the finest possible powder.

The preparation of peroxide of barium on the large scale, for the purpose of employing the product in the manufacture of hydrogen peroxide, is carried on by passing moist atmospheric air, freed from carbonic acid gas, over anhydrous baryta raised to faint redness in iron retorts.

No. 2,022.—**Brilliantine** (D.).

We are unable to give the composition of the particular brand of brilliantine you mention. A good preparation is the following:

Castor Oil	3 parts.
Glycerin	1 part.
Alcohol	10 parts.
Flavoring	q. s.

A more dense preparation, more of the nature of a pomatum is produced by mixing:

Veal Fat	4 oz.
Spermaceti	2 "
Castor Oil	2 "

and adding suitable aromatics, for instance, 30 drops of oil of bergamot and 2 drops of oil of clove.

No. 2,023.—**Camphorated Dover's Powder** (Junior Clerk).

This is a preparation introduced by the eclectics, and also called Eclectic Dover's Powder. It is composed of

Opium, powdered	30 grains.
Ipecac, powdered	60 "
Camphor, powdered	120 "
Cream of Tartar, powdered	480 "

Mix thoroughly.

Every 23 grains contain 1 grain of opium. The average dose is about 10 grains.

No. 2,024.—**Mouth Wash** (Ana).

We have already once before in this volume given a formula for a pleasant, refreshing mouth wash, but as we did not state the exact proportions to which the alcoholic solution of oils should be diluted, we will give the formula in detail:

Safrol	360 min.
Oil of Pinus Pumilio	120 "
" " Curaçao	120 "
" " Vetivert	6 drops
" " Wintergreen	12 "
" " Anise, Saxony	24 "
" " Rose-Geranium	6 "
Deodorized Alcohol	24 fl. oz.
Syrup	4 "
Water	enough to make 96 "
Phosphate of Calcium	q. s.

Dissolve the Oils in the Alcohol, gradually add the Syrup and Water, constantly shaking; then incorporate the Phosphate of Calcium and filter through a wetted filter, returning the first portion until it runs off clear.

No. 2,025.—**Copaiba Emulsion** (Junior Clerk).

This inquirer asks, what plan gives the best satisfaction in making a copaiba emulsion, and is at the same time the most expeditious.

As the writer mentions acacia in his letter, we presume he would prefer this as the emulsifying agent. In this case, the balsam of copaiba may be emulsified by triturating 2 parts of powdered acacia in a mortar with 3 parts of water, and then adding 4 parts of balsam of copaiba in portions, and continuing the trituration until the emulsion is completed. The above proportions are the most suitable for preparing the emulsion proper. If more water or balsam is wanted in the mixture, they may be subsequently added, though, if too much is added, the finished emulsion will not keep as long as it otherwise would.

A very simple method of emulsifying balsam of copaiba is by means of tincture of quillaja, which, for this purpose, is best prepared in the following manner:

Quillaja, in fine chips	8 tr. oz.
Alcohol	16 fl. "
Water	enough to make 48 fl. "

Place the quillaja in a suitable vessel with 2 pints of water, and boil for 15 minutes; then strain and add enough water through the strainer to make the strained decoction, when cold, measure 2 pints. Pour this into a bottle containing the alcohol, let the mixture stand 12 hours, and filter it through paper.

A fluidounce of this tincture will readily emulsify 4 fluidounces (and even more) of balsam of copaiba. The more water is added to this emulsion, the sooner will it separate, but it may be readily restored by shaking.

No. 2,026.—**Testing Urine for Morphine or Opium Constituents** (D. E. and S. E.).

When opium or morphine has been taken in rather large doses, and for some time, their detection in the urine is not difficult. If, however, the drug or the alkaloid have been given in small doses, and not in frequent intervals, it is often difficult to detect them. [Of course, opium, as such, cannot be detected in the urine, but the presence of certain constituents of it usually furnishes a clue to the fact that it has been taken.]

Among the many constituents of opium, there are two from whose *simultaneous* presence in the urine it is safe to judge that opium has been taken or administered. These two substances are meconic acid and meconine. If only meconic acid were found in the urine, it would be unsafe to conclude that opium has been taken, because meconic acid may have been introduced into the organism in other combination, for instance, as bimeconate of morphine.

If morphine alone is to be looked for, irrespective whether opium or the alkaloid itself has been taken, it is necessary to separate the latter in as pure a condition as possible. This may be accomplished by means of amylic alcohol in the following manner.

Evaporate the urine to one-fourth, add to it four times its volume of alcohol containing about two per cent of sulphuric acid, and set it aside for twenty-four hours. Filter and evaporate, or distil off the alcohol. Allow the remaining liquid to cool, and filter, washing the filter with a little water.

We have now an acid liquid which can be examined, if required, for meconine, meconic acid, and morphine.

If it is our object to search only for morphine, we shake the *acid* filtrate last obtained with successive portions of purified, colorless amylic alcohol, until this ceases to become colored. This treatment removes substances which would subsequently affect the purity of the morphine still to be extracted. The aqueous liquid is then rendered alkaline with ammonia and shaken with *hot* amylic alcohol, which is removed and evaporated. If an impure residue remains, the process should be repeated, in which case it is sometimes useful to reverse the method, namely, instead of evaporating the amylic solution, to shake it with acidulated water which will extract the alkaloid from it. The final residue may then be tested for its identity as morphine in the following manner:

1. Transfer a little of the residue upon a watch-glass' add to it a few drops of dilute hydrochloric acid, evaporate to dryness at a temperature not exceeding 120° F., then dissolve it in a few drops of water, and add a drop of *very* dilute solution of ferric chloride (free from acid). This will produce a magnificent blue color.

2. A drop of nitric acid placed upon a portion of the residue, or added to a moderately concentrated solution of it, produces an orange-red color, which is destroyed by adding sulphide of ammonium, but rendered red-brown by stannous chloride.

3. A few drops of Froehde's reagent (concentrated sulphuric acid, containing in each cubic centimeter 0.01 Gm. of molybdate of sodium or ammonium, and freshly prepared), when brought in contact even with traces of morphine, assume at once a magnificent violet color which soon turns green, brown-green, and yellow, becoming after twenty-four hours bluish-violet.

If the whole of the principles above mentioned are to be looked for, that is, if the fact of opium having been taken is to be established, then the acid liquid, prepared as before directed, is first shaken with 2 successive portions of benzin (boiling at 176° F.). The benzin is evaporated, and to the dry residue a few drops of colorless concentrated sulphuric acid are added. This will gradually assume a greenish tint, which deepens to red in 24 to 48 hours. If this greenish or red solution is cautiously and gently heated, it will become emerald-green, then blue, violet, and lastly again red.

This reaction indicates the presence of meconine. But it is usually obtainable only in cases when toxic doses of opium have been taken. In the case of small medicinal doses, it often fails, and there remains then only the test for morphine and meconic acid, the latter of which, however, is not a positive proof that opium, as such, has been taken, as has already been mentioned.

To detect the meconic acid, the acid liquid which had already been shaken with benzin, is next shaken with two successive portions (about equal volumes) of amylic alcohol, the amylic solution thoroughly shaken with distilled water (which removes traces of other constituents), and the washed amylic solution then evaporated to complete dryness (in order to dissipate any volatile acids that might have been extracted at the same time). The dry residue is treated with a little boiling water, and the solution may be tested after cooling at once, or it is preferably neutralized, while hot, with magnesia, and passed through a small filter which is washed with a few drops of water. The filtrate, if it contains meconic acid (or meconate of magnesium, as the case may be), on being treated with a few drops of dilute solution of ferric chloride, assumes a deep blood-red color, which is neither destroyed by hydrochloric acid, nor by boiling (difference from acetic acid), nor by addition of chloride of gold (difference from sulphocyanic acid).

The remaining acid liquid is now still to be tested for morphine. It is first freed from the traces of amylic alcohol which retains it in solution, by being shaken with petroleum ether (boiling point below 140° F.), and after removal of the ethereal layer, rendered alkaline with ammonia. It is then immediately shaken with two successive portions of hot amylic alcohol. The further procedure is the same as that above described, when morphine alone is looked for.

No. 2,027.—**Cannabin Tannate** ("Meta").

The *Cannabinum tannicum* of Merck has been recommended and much employed as a hypnotic, in doses of 4 to 8 (and even up to 16) grains, in cases of simple sleeplessness. It can be used where both morphine and chloral are contraindicated. Its chemical nature and mode of preparation are not yet exactly known, but Dr. Bernh. Fischer, in his useful little work on "Die neueren Arzneimittel" (Berlin, 1887), states that the following is probably the process, at least in its general features.

The herb (Cannabis indica) is first deprived of its poisonous ethereal oil by distillation; it is then extracted with water, and the aqueous extracts mixed with solution of neutral acetate of lead, whereby the various tannic acids which are present are precipitated as tannates of lead. The filtrate is now mixed with basic acetate of lead (Liquor Plumbi Subacetatis), whereby the glucosides are precipitated as insoluble lead compounds. The latter are washed, suspended in water and decomposed by hydrosulphuric acid. After further purification they are combined with tannic acid. The commercial tannate of cannabin probably contains several glucosides, but it is important that the powerful alkaloid *tetanine* existing in cannabis indica should be separated from them.

The product appears in form of an amorphous, yellowish or brownish-gray powder of very faint odor of hemp, a somewhat bitter, strongly astringent taste, little soluble in water, alcohol or ether, but soluble in warm water acidulated with hydrochloric acid, and even in cold alcohol similarly acidulated. The base, cannabin, appears to be closely related to alkaloids, as it may be separated from the compound by adding soda to it and dissolving it out with ether.

No. 2,028.—**Sulphides of Sodium and Potassium** (F.).

This correspondent draws our attention to a passage which has been published in a recent number of a Western pharmaceutical paper. The passage is as follows:

"There is no sulphide of sodium. It is characteristic of sodium and potassium, that they do not form sulphides."

And he asks us to state whether this remark is correct.

As it stands, it is not correct. In analysis, when the several groups of elements are separated from each other, a certain number of them form insoluble sulphides, which enables their separation from others. There are finally left certain others which do not form *insoluble* sulphides, or may not form sulphides at all under the given circumstances, and to this group belong both sodium and potassium. If the above-quoted passage was intended to apply to results of analytical methods, and was meant to convey the idea that there are no *insoluble* sulphides of sodium or potassium which can be thrown down as precipitates, it might have been correct. But there are well-characterized *soluble* sulphides of both of these elements, which can be obtained in various ways.

Of potassium and sulphur, not less than five different compounds are known, all of which are soluble in water, while those richer in sulphur are also soluble in alcohol. Instead of enumerating them here in detail, we will refer you to Roscoe and Schorlemmer, "Treatise on Chemistry," II., 1, 97; 154. Graham-Otto's "Ausf. Lehrbuch d. Chemie," II., 3, p. 240-246; and 444-445).

No. 2,029.—**Angostura Bitters** (Melbourne).

The analyst you mention in your letter has never, to our knowledge, published anything relating to the composition of these bitters, which are comparatively unknown in Europe. The formula of the original "Angostura Bitters" has never been published; but the following is said to furnish a product resembling it:

Angostura Bark, Canada Snake Root (Asarum Canadense), Serpentaria, Liquorice Root, Cinchona (yellow), Taraxacum, Pimenta, each 10 oz.; Cardamom, 6 oz.; Gentian, Balsam Tolu, Orange Peel (sweet), Rhubarb, Galanga, each 4 oz.; Curcuma, 8 oz.; Nutmeg, Coriander, Catechu, Wormseed, each 2 oz.; Caraway, Cinnamon, each 1½ oz.; Red Saunders, 1½ lb. Grind all the solid substances together and macerate them during a fortnight in 50 gallons of diluted alcohol; then add 30 lbs. of honey, and lastly filter.

As will be seen, the preceding formula directs nearly every commonly used aromatic. It is probable that a much smaller number would make a more agreeable compound (if "agreeable" is the proper word).

No. 2,030.—**Prescription Query** (Alabama).

We are asked what is meant by the following prescription:

℞ Pulvis Potass. Carb. et Tartrat.,
Ferri Sulph. ex..... .....āā ʒij.

M. et fnt. pil. No. xlviii.

Our correspondent says that he has had this presented to him a number of times. We presume he filled it by disregarding the two words "et Tartrat." If he did so, he did exactly right.

We hold that the words "et Tartrat." are miswritten for "e Tartaro." Formerly, when potash salts were obtained chiefly from wood-ashes, the commercial carbonate of potassium was too impure for medicinal use. A pure carbonate was prepared by igniting the cream of tartar (argols) deposited by wine during fermentation. This variety of carbonate of potassium used to be designated as *Potassii Carbonas e Tartaro*, or *Potassii Carbonas e Tartari Crystallis*, and it is even now prescribed sometimes under this name by old practitioners, or by those who have acquired their medical or therapeutic stock of knowledge from older books.

The above prescription is, therefore, equivalent to the usual formula for Blaud's pills, with omission of the excipient.

No. 2,031.—**Orange Culture in California and Cuba** (R.).

We cannot afford the space for a detailed answer of the query of our correspondent, who desires information on the relative qualities of the products (oil, etc.) derived from the several localities on this continent where oranges are grown, and also on other points connected therewith. We will, however, refer him to several works which will give him probably all the information that is publicly available. Regarding Cuba, we are not acquainted with any work treating especially on this subject. But the work presently to be quoted, by Rev. T. W. Moore, may partly cover the ground, we believe: "Die Tropische Agrikultur," von Heinrich Semler, San Francisco, 8vo, Wismar, 1887. Vol. II., pp. 1-106 *b*. "Treatise and Handbook of Orange Culture in Florida," by Rev. T. W. Moore, 12mo, New York (second edition). "Reports of the United States Consuls" (Washington published by Government), vol. VI. (No. 22) p. 610; also vol. XII. (No. 41½),